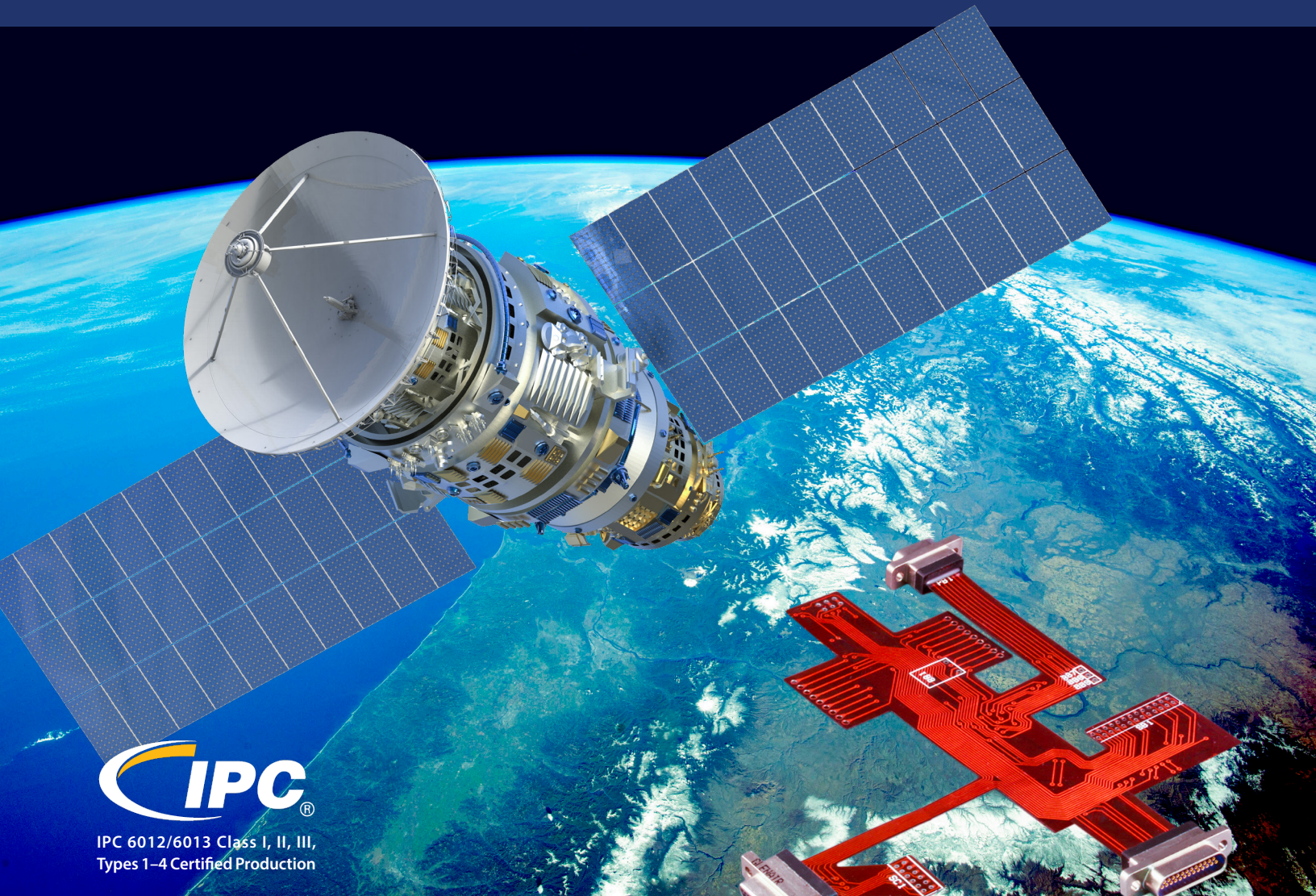


MISSION-CRITICAL  
INTERCONNECT  
SOLUTIONS



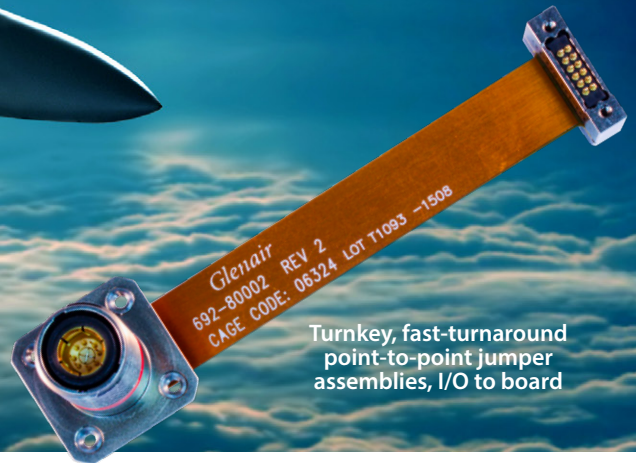
IPC 6012/6013 Class I, II, III,  
Types 1-4 Certified Production

IPC-6012/6013 CLASS III, TYPES 1-4

# Flex Circuit Assemblies: Turnkey, Connectorized PCB Solutions

Flex Circuit, Rigid Flex Circuit, PCBA, and Optical Flex Assemblies

JANUARY 2023



Turnkey, fast-turnaround  
point-to-point jumper  
assemblies, I/O to board

Turnkey connectorized flex, rigid flex, and rigid PCB assemblies incorporating Glenair's broad range of innovative small form-factor circular and rectangular PC-tail connector solutions. All terminations backpotted for compliance with conformal coating processes. Optical and electrical solutions. Special long-length assemblies up to 12 feet.

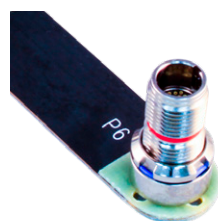
- Single-sided, double-sided, and multilayer flex circuitry
- Flex, rigid flex, and PCBA board assemblies
- Through-hole and surface-mount connector terminations
- Turnkey catalog jumper assemblies
- Fairway-Flex long-length flex circuit assemblies

**GLENAIR SIGNATURE  
PC-TAIL CONNECTORS**

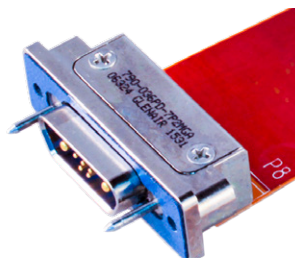
**Optimized for Every Application Requirement**



AlphaLink / Micro-D



SuperFly



Micro-Crimp

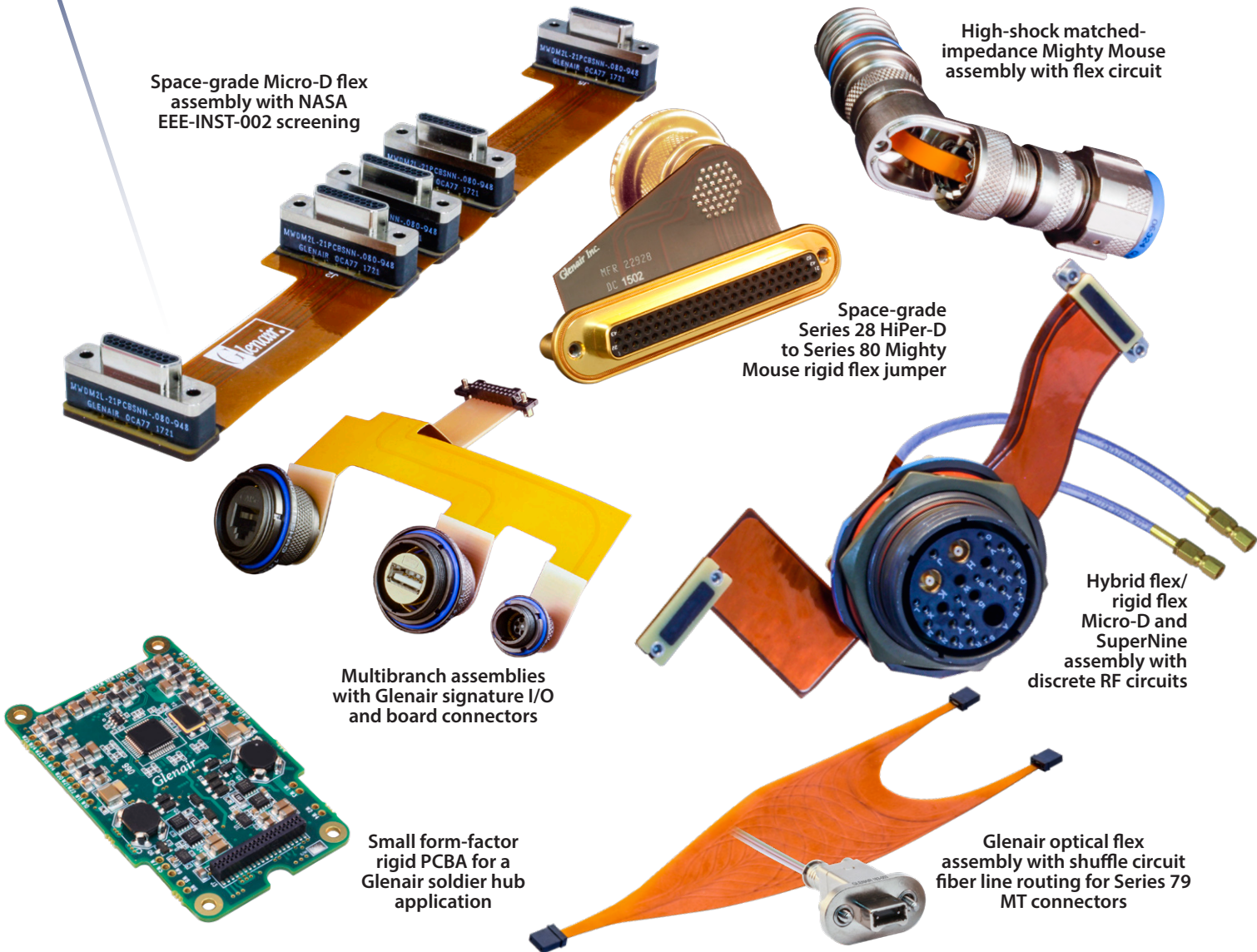


SuperNine

With Glenair signature PC tail connectors—terminated, tested, and qualified all under one roof

## RANGE OF ASSEMBLY TYPES AND STYLES

## With Glenair Signature Connectors



## OPTIMIZED SPACE-SAVING

Flex and rigid flex circuit assemblies are ideal for space-constrained electronic packages and enclosures, or for interconnect systems that are required to flex in 3 axes during normal use. Flex and rigid flex circuitry offers complete freedom to design boards and wiring for even the most densely-packed electronic enclosures. In mission-critical applications, the ability to reduce or even eliminate discrete wiring and FR-4 boards in favor of flex circuitry helps designers make the most efficient use of available space.

## Packaging and Integration



## Flex and rigid flex specification standards

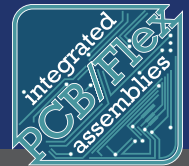
GLENAIR FLEX  
AND RIGID-FLEX

## Manufacturing Formats and Specifications

The following tables describe, in brief, Glenair flex and rigid-flex manufacturing formats and specifications. Glenair recommends commercial customers specify IPC-6012/6013 standards of workmanship which are fully supported by Glenair. Military customers may alternatively cite specifications IAW MIL-PRF-31032.

FLEX ASSEMBLIES	
<b>Design Formats</b>	PADS • PADS PRO • Pro E / Creo • SolidWorks • Autodesk Inventor • CAM 350 • Altium • Valor • POLAR • XPedition
<b>Manufacturing Formats</b>	DXF • Gerber • ODB++ • IPC 2581
<b>Layer Count</b>	Max typ. up to 8
<b>Termination</b>	Thru hole • Reverse bare • Floating fingers • ZIF • Surface-mount
<b>Conductor Width/Space</b>	Lines: .003" • Spacing: .003" (dependent on copper weight)
<b>Bend Radius (military)</b>	Single Metal Layer: 4–6X overall flex thickness • Double Metal Layers: 6–10X overall flex thickness • Multi Layer Metal: 12–15X overall flex thickness
<b>Materials / Tg</b>	Substrate: DuPont™ Kapton® polyimide flex adhesive and adhesiveless -60°C to 125°C Cover layer: DuPont™ Kapton® Stiffener: FR4 or DuPont™ Kapton® (metal stiffeners available upon request) Conductor: Copper, Constantan High-temperature materials and more available
<b>Surface Finish</b>	ENIG • HASL • Immersion Tin and Silver • Soft and Hard Gold
<b>Specs and Quality Management</b>	IPC-6013 Class I, II, III, types 1-3 • ISO 9001, AS 9100J-STD-001 Space
RIGID-FLEX ASSEMBLIES	
<b>Design Formats</b>	PADS • PADS PRO • Pro E / Creo • SolidWorks • Autodesk Inventor • CAM 350 • Altium • Valor • POLAR • XPedition
<b>Manufacturing Formats</b>	DXF • Gerber • ODB++ • IPC 2581
<b>Max Panel Thickness</b>	Range of thicknesses from .010" to as thick as .250"
<b>Layer Count</b>	27 +
<b>Via Technology</b>	Blind, buried • Thru hole • Filled (conductive and non-conductive)
<b>Conductor Width/Space</b>	Lines: .003" • Spacing: .003" (dependent on copper weight)
<b>Materials / Tg</b>	Substrate: Nelco 4000, Rogers, Megtron, Polyimide, and more
<b>Surface Finish</b>	ENIG • HASL • Immersion Tin and Silver • Soft and Hard Gold
<b>Specs and Quality Management</b>	IPC-6013 Class I, II, III, type 4 • ISO 9001, AS 9100, J-STD-001 Space

DuPont™ and Kapton® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company.



## Design options, flex, rigid flex, and rigid PCB

### STANDARD DESIGN OPTIONS

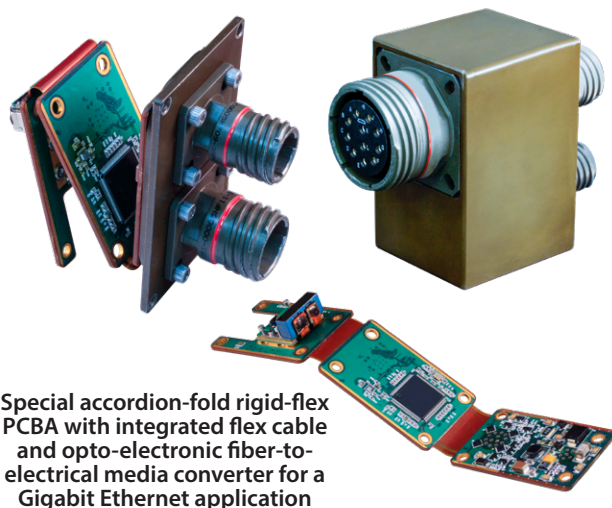
### Integrated Flex / Rigid-flex assemblies

Properly designed flex and rigid-flex assemblies offer significant space and weight savings compared to wire harnesses. Many design options are available, including integrated stiffeners, shielding, factory forming, selective bonding, termination, layer count and so on.

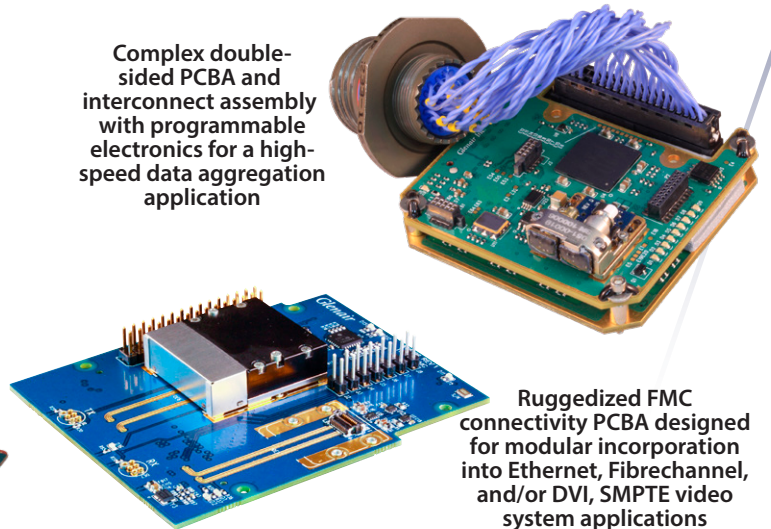
- 1 Right-angle surface mount Nanominiature plug connector
- 2 Hatch shield and solid copper shield flex
- 3 Series 801 Mighty Mouse receptacle with PC tails
- 4 AlphaLink® SL spring-loaded contact connector
- 5 Cross-hatch shield flex
- 6 Board-mount transceiver
- 7 Series 79 Micro-Crimp® right-angle PCB panel-mount receptacle
- 8 Solid copper shield flex
- 9 Micro-D 37-pin connector
- 10 Silver paste shield flex
- 11 Resistor, inductor, and capacitor
- 12 Series 88 SuperFly™ rear panel mount PCB receptacle
- 13 Black EMI film (suitable for commercial applications)
- 14 D38999 Series II type hermetic PC tail receptacle connector
- 15 ZIF (Zero Insertion Force) termination
- 16 6-layer rigid-flex circuit board with BGA
- 17 Overmolded termination

### SMALL FORM-FACTOR PCBAs AND FLEX-TO-INSTALL ASSEMBLIES

### Integrated Design Examples



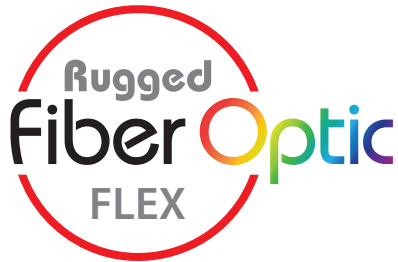
Complex double-sided PCBA and interconnect assembly with programmable electronics for a high-speed data aggregation application



High fiber count, small form-factor optical flex circuits for rugged defense, aerospace, and space applications

SHUFFLE CIRCUITS AND OPTICAL FIBER CROSSOVER DESIGNS

## High data rate **Optical** assemblies

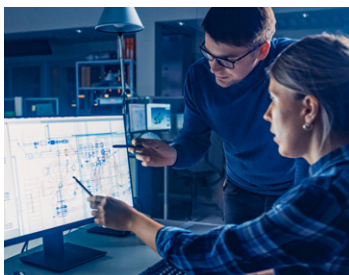
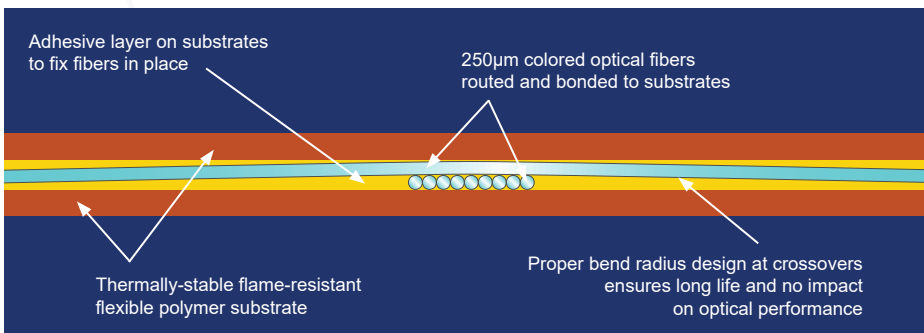


**FEATURES**

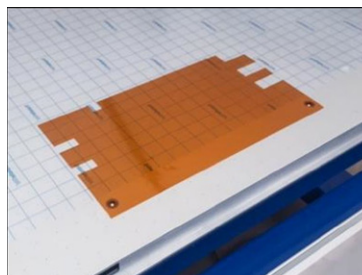
- Connectorized optical harness assemblies and breakouts, SM and MM
- Shuffle circuits with low-loss multimode fiber
- Ribbonized MT leads up to 12 inches and longer

**BENEFITS**

- Reduced installation / termination time and improved reliability
- Superior fiber management
- Complex fiber routing in minimal space
- Controlled routing lengths (low-skew)
- Controlled bend radius for minimized bend loss



3D layout and routing designs in Fusion 360



Build-to-print per customer specifications

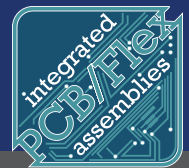


Single- and multimode fiber bonding

- **Optical fiber bonded to a flame-resistant Kapton substrate—rad-hardened and outgassed assemblies available**
- **High-density fiber-to-fiber spacing: 250 µm**
- **Optimized fiber layouts, bend radius, and routing for high fiber-count applications**
- **Industry-standard connector terminations including FC, SC, LC, and others plus Glenair Signature F/O terminations including MT, GC, GHD, GFR, Eye-Beam, and others**

Optical Fiber Nominal OD	250um
Fiber Types	Singlemode/Multimode
Operating Temperature	-40° to +100°C
Typical Minimum Bend Radii	0.5 inch
Circuit Thickness	.018 inch
Flat and 3D Designs	Yes
Flame Resistance	UL-V1 or Better
Shuffle Circuits	Yes
Substrate	Kapton

# Optical Flex Circuit Assemblies



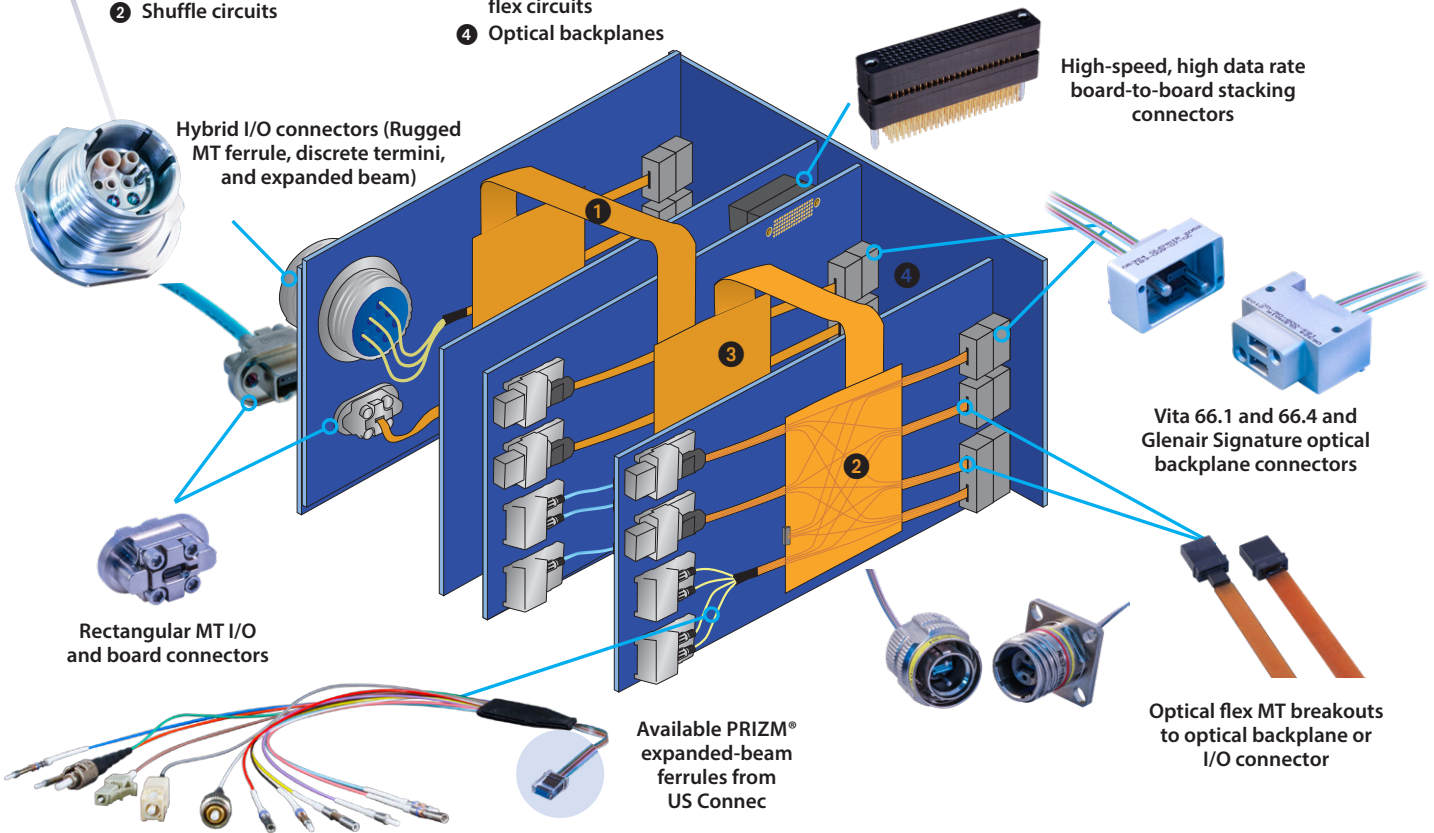
High fiber count, small form-factor optical flex circuits for rugged defense, aerospace, and space applications

## OPTICAL FLEX ECOSYSTEM

## Integrated SM and MM Optical Flex assemblies

Ecosystem includes MTP®/MPO transceiver interface connectors, turnkey fiber optic breakout cables, and ruggedized MT ferrule-equipped I/O connectors—circular and rectangular.

- 1 Card-to-card optical flex circuits
- 2 Shuffle circuits
- 3 On-board optical flex circuits
- 4 Optical backplanes



### TURNKEY OPTICAL FLEX JUMPERS



Optical flex jumpers terminated to MT fiber optic ferrules, PRIZM MT expanded-beam ferrules, and standard Fiber Optic connectors, as well as Glenair signature environmental I/O fiber optic connectors, are available as catalog items.

SPACE- AND MIL-  
AERO GRADE FPC  
IPC-6012 / 6013  
SPECIALIZING IN  
CLASS III, TYPES  
1-4

# Fairway-Flex™

LONG-LENGTH FLEX ASSEMBLIES

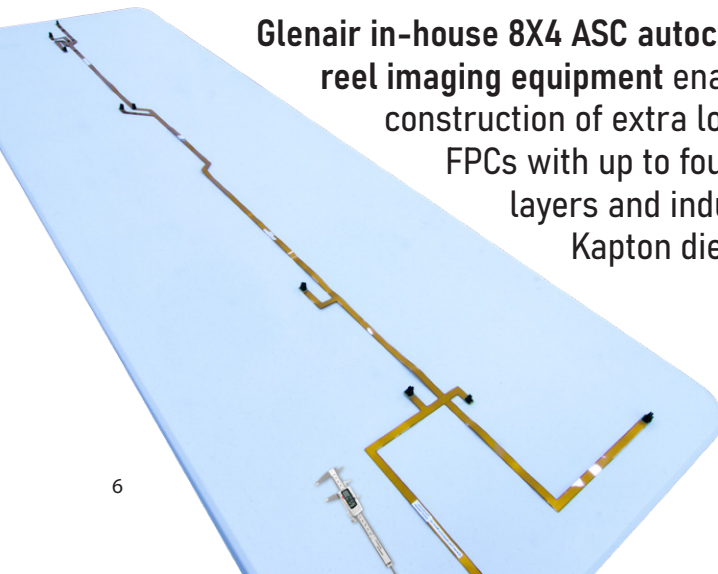
## Long-Length Flexible Printed Circuit Assemblies, 3 to 8 feet



Glenair Fairway-Flex™ is a long-length, space- and mil-aero grade flexible printed circuit solution incorporating Glenair's broad range of innovative small form-factor circular and rectangular PC-tail connectors.

Glenair in-house 8X4 ASC autoclave and reel-to-reel imaging equipment enables one-piece construction of extra long "Fairway-Flex" FPCs with up to four layers circuit layers and industry-leading Kapton dielectric substrates.

- **Turnkey:** from design to prototype to volume production
- **Rapid prototype process** includes 3-D "paper doll" fit-check mockups with copper-clad DuPont™ Kapton® to simulate actual flexibility
- **EMI/RFI Shielding** with solid or patterned shield planes, and/or with shielded I/O interconnects
- **Configurations include** single-sided, double-sided, and multilayered
- **Point-to-point and multibranch assemblies**
- **ISO 9001, AS9100 certified**



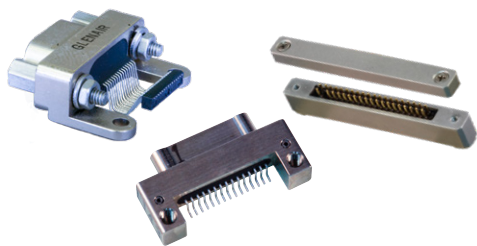
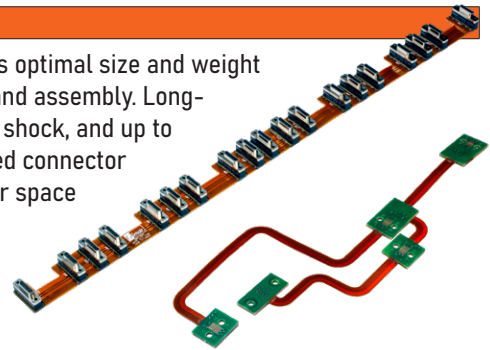


## Fairway-Flex™ Signature Long-Length FPC

### TECHNOLOGY OVERVIEW: FAIRWAY-FLEX

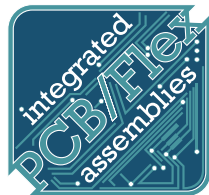
Replacing long-length wire bundle assemblies with high-density flex circuitry ensures optimal size and weight reduction, eliminates wiring errors resulting in faster, error-free on-site installation and assembly. Long-length Fairway-Flex assemblies offer better resistance to high levels of vibration and shock, and up to 1 million flex and duty cycles. Fairway-Flex designs offer both single- and double-sided connector mounting and 3D circuit routing within equipment enclosures, LRUs, and the aircraft or space fuselage.

Fairway-Flex assemblies may be equipped with **hard mount points and stiffeners** as required, as well as the ability to implement flex-to-install designs that combine PCB boards and flex circuitry



A key step in the conceptualization of most flex assemblies is the **selection of I/O and board-level PCB connectors**. Glenair manufactures the industry's most complete range of rectangular and circular PCB connectors for turnkey incorporation into flex assembly designs. Note that this lineup includes both industry-standard solutions such as D-Subs, Micro-Ds and Nanos, but also Glenair signature solutions such as the Series 79 Micro-Crimp, that offer better-than-QPL performance.

### INTEGRATED PCB/FLEX SPECIFICATION STANDARDS



The following tables describe Glenair Fairway-Flex **manufacturing formats and specifications**. Glenair recommends commercial customers follow IPC-6012/6013 specification standards. Military customers may alternatively cite specifications IAW MIL-PRF-31032. 5. Vias for interconnect mounting and signal translation between layers to be located on far ends of extended length flex. For vias in center body of extended length flex—or for other non-standard requirements, consult factory.

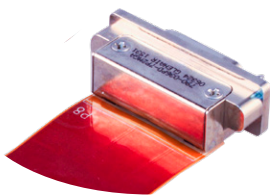
#### Fairway-Flex™ Assemblies

<b>Design Formats</b>	PADS • PADS PRO • Pro E / Creo • SolidWorks • Autodesk Inventor • CAM 350 • Altium • Valor • POLAR • XPedition
<b>Manufacturing Formats</b>	DXF • Gerber • ODB++ • IPC 2581
<b>Layer Count</b>	Max typ. up to 4
<b>Termination</b>	Thru hole • Reverse bare • Floating fingers • ZIF Termination
<b>Conductor Width/Space</b>	Lines: .010" • Spacing: .010" (design-dependent)
<b>Bend Radius (military)</b>	Single Metal Layer: 4–6X overall flex thickness • Double Metal Layers: 6–10X overall flex thickness • Multi Layer Metal: 12–15X overall flex thickness
<b>Materials / Tg</b>	Substrate: DuPont™ Kapton® polyimide flex adhesive and adhesiveless -60°C to 125°C Cover layer: DuPont™ Kapton® Stiffener: FR4 or DuPont™ Kapton® (metal stiffeners available upon request) Conductor: Copper, 1/4 ounce to 2 ounce High-temperature materials and more available
<b>Surface Finish</b>	ENIG • HASL • Immersion Tin and Silver • Soft and Hard Gold
<b>Specs and Quality Management</b>	IPC-6013 Class I, II, III, types 1-3 • ISO 9001, AS 9100J-STD-001 Space

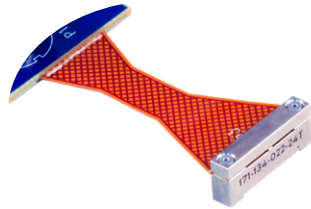
Application / design options

GROUND PLANES AND SHIELDS

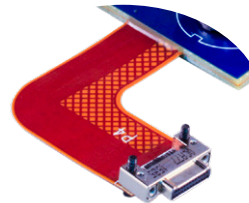
Managing EMI emissions and signal line impedance are critical aspects of flex circuit design. Effective use of ground / shield planes, appropriate connector interfaces, and matched-impedance flex circuits delivers optimal high-speed signal integrity.



Full copper shield



Cross-hatch mesh shield



Hybrid solid/mesh



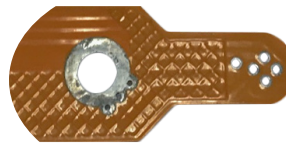
Silver epoxy



Connector-to-flex shielding  
(soldered pin insert)



Stitched vias



Polyimide-based  
for contact grounding



Black Tatsua

STRAIN RELIEF OPTIONS FOR FLEX AND RIGID FLEX



Reinforcing "wings"



Stiffeners at  
critical assembly points

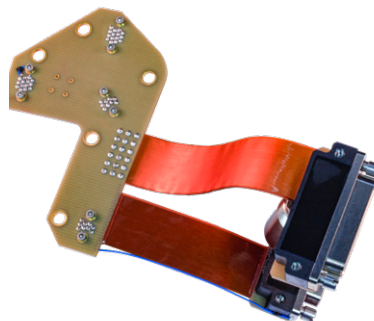
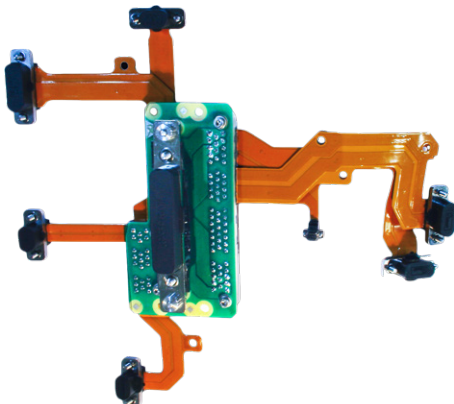


Reinforced solder joint  
with potting



Molded epoxy  
encapsulant

RIGID FLEX MOUNTING POINTS FOR IMPROVED VIBRATION AND SHOCK RESISTANCE



Typical examples of rigid flex  
mounting points in connectorized  
flex circuit assemblies

## Application / design options

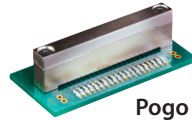
### FLEX, RIGID FLEX, AND PCBA CONNECTOR TERMINATION OPTIONS



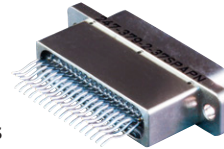
Thru-hole



Surface mount



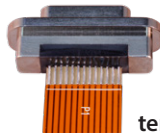
Pogo pin /  
spring-loaded contacts



Straddle  
mount



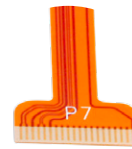
Compliant  
pins



Direct  
termination



Encapsulating  
pot



ZIF (zero  
insertion force)

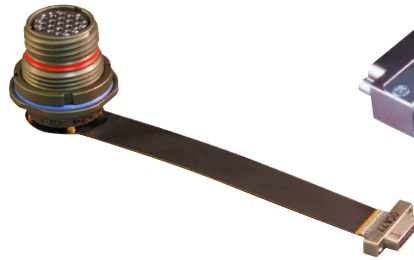
### FLEX AND RIGID FLEX I/O CONNECTOR OPTIONS



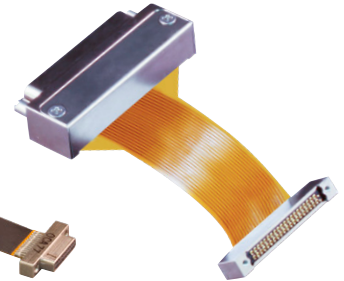
Environmentally sealed  
rectangular I/O interface



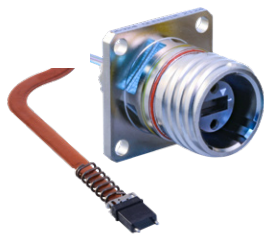
Military aerospace grade  
circular: SuperNine D38999



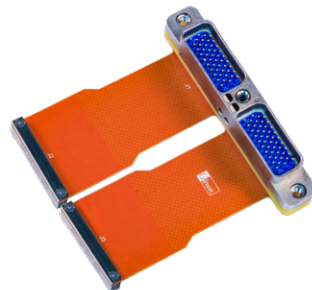
Micro miniature aerospace-  
grade circular: Mighty Mouse



EMI shrouded precision-  
machined M2430



Ruggedized MT fiber optic  
I/O circular



Dual-gang modular I/O:  
Series 20 Super-Twin



Series 970 PowerTrip  
power connector I/O

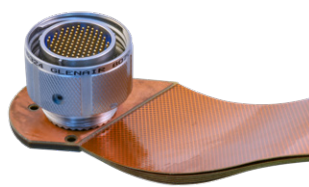


Micro miniature  
push-pull QDC I/O

### MULTILAYER AND DOUBLE-SIDED FLEX AND RIGID-FLEX DESIGN OPTIONS



Multilayer rigid-flex circuit assemblies—up to 27 layers—offer increased circuit density while still maintaining the medium's dynamic 3D flex characteristics



Double-sided flex circuits increase circuit density and power handling

## Rectangular PC-tail connectors potted, sealed, and conformal-coating compatible

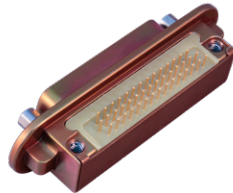
**SERIES 28 HIPER-D M24308 HIGH-PERFORMANCE ENVIRONMENTAL PCB CONNECTORS**



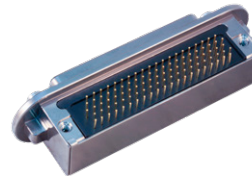
**280-022**  
straight PC tail  
pin connector



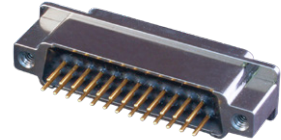
**280-023**  
straight PC tail  
socket connector



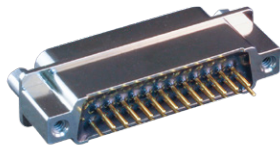
**280-024**  
right-angle PC tail  
pin connector



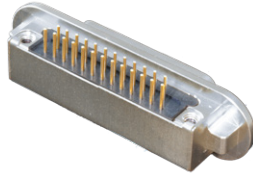
**280-025**  
right-angle PC tail  
socket connector



**280-026**  
straight PC tail  
pin connector, low-profile



**280-027**  
straight PC tail  
socket connector, low-profile



**280-028**  
right-angle PC tail  
pin connector, low-profile



**280-029**  
right-angle PC tail  
socket connector, low-profile



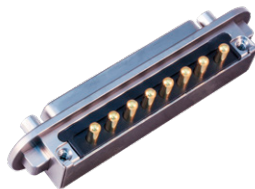
**280-050**  
combo straight PC tail  
pin connector



**280-051**  
combo straight PC tail  
socket connector



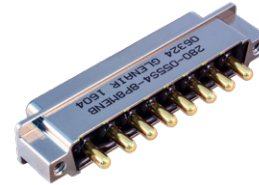
**280-052**  
combo right-angle PC tail  
pin connector



**280-053**  
combo right-angle PC tail  
socket connector



**280-054**  
combo straight PC tail  
pin connector, low-profile

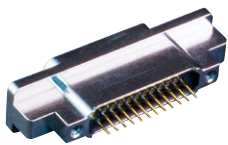


**280-055**  
combo straight PC tail  
socket connector, low-profile



**280-056**  
combo right-angle PC tail  
pin connector, low-profile

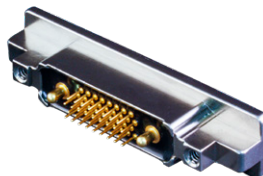
**SERIES 79 HIGH-PERFORMANCE MICRO-CRIMP ENVIRONMENTAL PCB CONNECTORS**



**790-028**  
straight PC tail  
panel receptacle



**790-043**  
straight PC tail  
free-standing receptacle



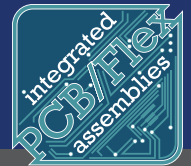
**790-029**  
straight PC tail  
panel plug



**790-044**  
straight PC tail  
free-standing plug

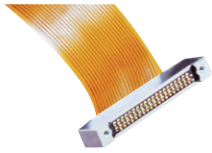


**790-042**  
Right angle PCB  
panel-mount hybrid coax

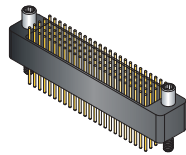


## Rectangular PC-tail connectors potted, sealed, and conformal-coating compatible

### ALPHALINK • SERIES 791 • SERIES 792 HIGH-PERFORMANCE RECTANGULAR PCB ENVIRONMENTAL CONNECTORS



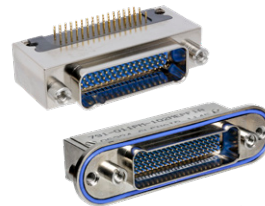
**171-134**  
AlphaLink SL connector with  
spring-loaded contacts



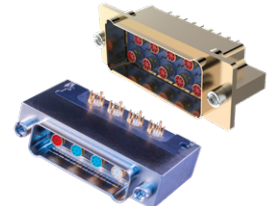
**GSTT-PF**  
HD Stacker  
top-of-stack flex



**GTBA/GTBB-SF**  
MIL-DTL-55302 type  
flex vertical PCB

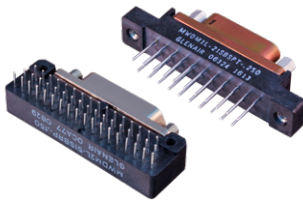


**791-015/-011**  
Series 791 straight and 90°  
scoop-proof panel-mount  
with grounding fingers

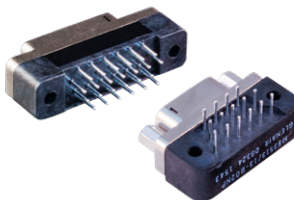


**792-006, -010**  
Straight and 90°  
high-speed EI Ochito

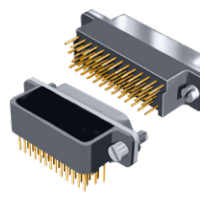
### MIL-DTL-83513 MICRO-D AND HIGH-SPEED MICRO-D ENVIRONMENTAL PCB CONNECTORS



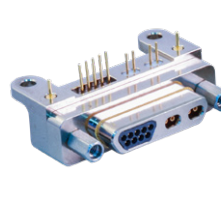
**MWDM-B**  
**MWDM-BR**  
vertical and 90° mount  
thru-hole PCB



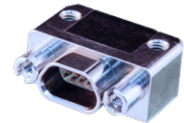
**MWDM-CBS**  
**MWDM-CBR**  
vertical and 90° mount  
thru-hole condensed PCB



**GMR75**  
**GMR75C**  
Condensed board, .075" pitch  
vertical and 90° PCB

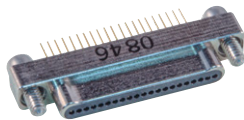


**GHS4-M**  
VersaLink  
high-speed Micro-D  
right angle PCB

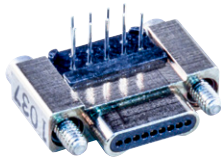


**GHSM-HBR**  
High-Speed Micro-D  
right angle PCB

### MIL-DTL-32139 NANOMINIATURE AND GMMD ENVIRONMENTAL PCB CONNECTORS



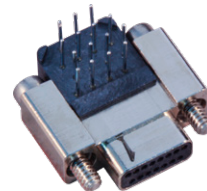
**890-006/-007**  
single-row vertical PCB  
plugs / receptacles



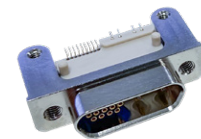
**890-008/-009**  
single-row right angle PCB  
plugs / receptacles



**891-006/-007**  
dual-row vertical PCB  
plugs / receptacles



**891-008/-009**  
dual-row right angle PCB  
plugs / receptacles

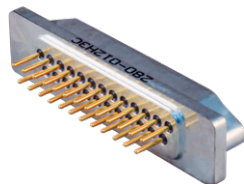


**GMMD**  
high-speed micro with nano  
TwistPin contacts

### HERMETIC RECTANGULAR GLASS-TO-METAL SEAL PCB CONNECTORS



**790-066**  
Series 79  
hermetic PCB connectors



**280-012H**  
HiPer-D  
hermetic PCB connectors



**177-140H**  
Micro-D solder-mount  
hermetic PCB connectors



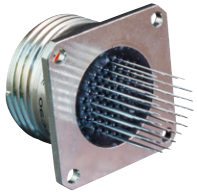
**177-705H**  
Micro-D rear panel-mount  
hermetic PCB connectors



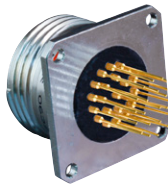
**QPL M24308/9**  
D-Subminiature straight  
thru-hole PCB hermetic

Circular PC-tail connectors  
potted, sealed, and conformal-coating compatible

SUPERNINE® D38999 SERIES III ENVIRONMENTAL PCB CONNECTORS



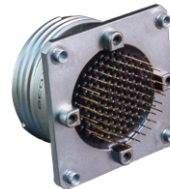
**233-207**  
flush-flange receptacle



**233-208**  
stepped contact receptacle



**233-209**  
short standoff receptacle



**233-210**  
threaded standoff receptacle



**233-211**  
dual flange receptacle

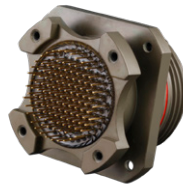
SUPERNINE® D38999 SERIES III ENVIRONMENTAL PCB SPECIALS



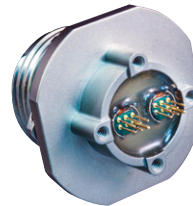
**233-218**  
high-speed hybrid  
with threaded standoffs



**233-218**  
high-speed wall mount  
with El Ochito® contacts



**240-383D**  
dual-flange wall-mount  
EMI filter connector

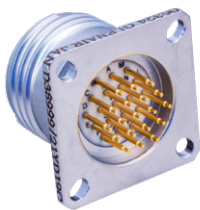


**050-335**  
opto-electronic jam nut  
with threaded standoff



**257-859**  
PCB receptacle with  
compliant pin contacts

SUPERNINE® D38999 SERIES III GLASS- AND LIGHTWEIGHT ENCAPSULANT-SEALED PCB HERMETICS



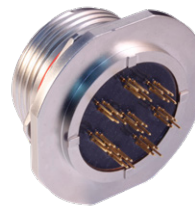
**233-100-H2**  
box mount receptacle



**233-100-H5**  
solder mount receptacle



**233-100-H7**  
jam nut mount receptacle

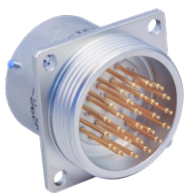


**233-254**  
high-speed hermetic  
jam nut receptacle

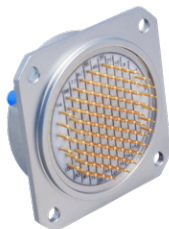


**233-250**  
CODE-RED lightweight  
hermetic jam nut receptacle

MIL-DTL-38999 SERIES I, II, III, AND IV QPL GLASS-SEALED PCB CONNECTORS—CLASS N, Y, AND H (SPACE-GRADE) HERMETIC



**231-100-H0, H7, H5**  
Series I scoop-proof bayonet



**232-100-H0, H2, H5, H7**  
Series II low-profile bayonet



**233-100-H2, H5, H7, H8**  
Series III triple-start



**234-100-H2, H7, H5, H8**  
Series IV scoop-proof breech-lock

## Circular PC-tail connectors potted, sealed, and conformal-coating compatible

### SERIES 80 MIGHTY MOUSE MICRO MINIATURE ENVIRONMENTAL PCB CONNECTORS



**Series 800**  
UN thread



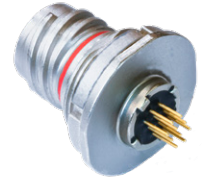
**Series 801**  
double-start thread



**Series 803**  
bayonet-lock

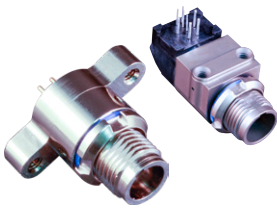


**Series 804**  
push-pull QDC



**Series 805**  
triple-start

### SERIES 88 SUPERFLY AND M32139-TYPE NANOMINIATURE CIRCULAR ENVIRONMENTAL PCB CONNECTORS



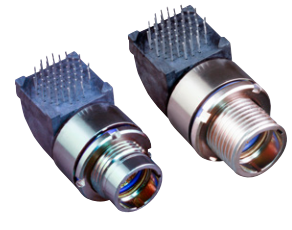
**SuperFly**  
880-041R • 880-037R  
QDC vertical and 90° receptacle



**SuperFly**  
881-019R • 881-020R  
threaded vertical and 90° receptacle



**Nanominiature**  
893-008 • 893-009  
breakaway and threaded straight



**Nanominiature**  
893-010 • 893-011  
breakaway and threaded right-angle

### SERIES 806 MIL-AERO MICRO MINIATURE ENVIRONMENTAL PCB CONNECTORS



**806-021 • 806-022**  
Environmental



**806-058**  
High-frequency coax



**806-039 • 806-040**  
High-speed E1 Ochito



**240-806-21**  
EMI/RFI filter



**806-025, -026 glass**  
**806-028, -043 lightweight**  
Hermetic

### SUPERSEAL RJ45 / USB ENVIRONMENTAL PCB CONNECTORS



**MIL-DTL-38999 Sr. III**  
SuperSeal



**Series 80 Mighty Mouse**  
SuperSeal



**Series IPT 26482 type**  
SuperSeal



**Series ITS 5015 type**  
SuperSeal



**MIL-DTL-28840**  
SuperSeal



Ruggedized I/O connectors optimized for use with high-density MT ferrule optical flex

Mated pair of high-density Series 79 MT connectors—the smallest and lightest ruggedized MT assembly in the industry. Note the use of Optical Flex on the I/O receptacle side, and round environmental cable on the plug side

Lightweight, small form-factor MT fiber optics in Glenair Signature SuperNine® and Series 79 connectors: The aerospace-grade I/O connector solution for use with Glenair parallel optical transceivers and MT optical flex circuits

**TWO STYLES OF HIGH-DENSITY MT FERRULES SUPPORTED: STANDARD MT PHYSICAL CONTACT FERRULE AND LOW-LOSS PRIZM® LENS EXPANDED BEAM**

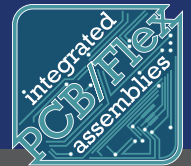


Both ferrule styles are easily inserted with common tools, and may be equipped with an engineered spring member for precise axial alignment in high vibration and shock applications.

- Small form-factor, high-density MT fiber optic solutions for rugged space and mil-aero applications
- Optimized for use with parallel optical transceivers and optical flex circuitry
- Singlemode, multimode and specialty fiber including radiation-tolerant for space applications
- Temperature tolerance from -40°C to +85°C
- Designed for optimal low insertion loss performance in high vibration and shock environments
- IP67 Environmental sealing, IP68 available at interface



# SPACE AND MIL-AERO GRADE MT Fiber Optic Connectors



for use with optical flex circuits

CIRCULAR  
AND RECTANGULAR

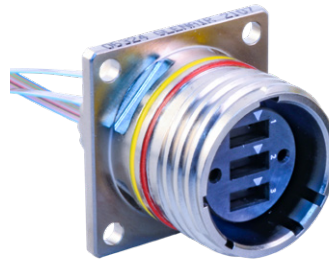
## Ruggedized MT I/O Connectors



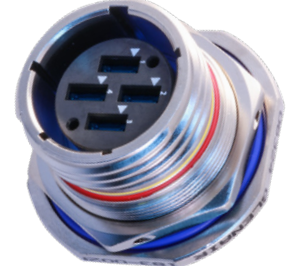
Plug with EMI/RFI ground spring  
Shell size-insert arrangement  
11-1, Up to 24 fibers  
(1 MT ferrule)



In-line receptacle  
Shell size-insert arrangement  
13-2, Up to 48 fibers  
(2 MT ferrules)



Panel-mount receptacle  
Shell size-insert arrangement  
15-3, Up to 72 fibers  
(3 MT ferrules)



Jam nut receptacle  
Shell size-insert arrangement  
17-4, Up to 96 fibers  
(4 MT ferrules)



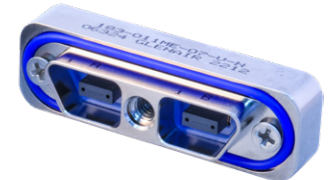
Single-ferrule MT  
Series 79 plug  
up to 24 fibers



Single-ferrule MT  
Series 79 receptacle  
up to 24 fibers



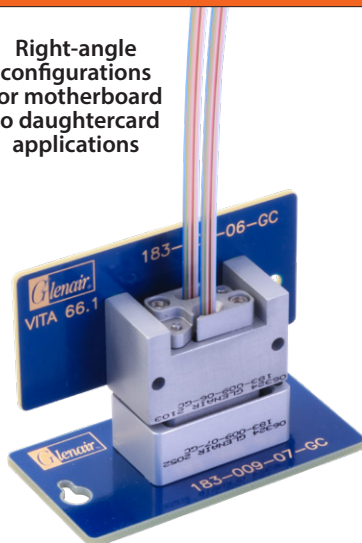
Dual-ferrule MT  
Series 79 plug  
up to 48 fibers



Dual-ferrule MT  
Series 79 receptacle  
up to 48 fibers

### VITA 66.1 AND 66.4 MT FERRULE RUGGED OPTICAL BACKPLANE CONNECTORS FOR VPX BACKPLANE APPLICATIONS

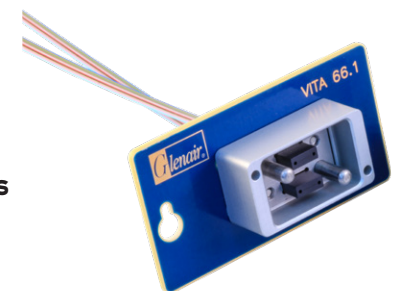
Right-angle  
configurations  
for motherboard  
to daughtercard  
applications



- VITA 66.1 and 66.4 spec compliant for use with optical backplanes
- Integrated alignment pins
- Glenair designed spring-loaded MT ferrules
- Supports industry standard MT ferrules—up to 24 channels per MT
- No unique tooling required for assembly

#### IDEALLY SUITED FOR

- Embedded computing devices
- Military aircraft (Phased Array) Radars
- Flight computers and other aircraft LRUs
- Command center comms equipment

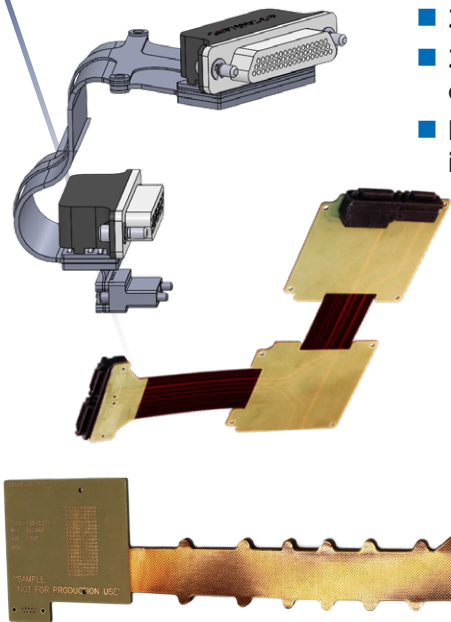


SolidWorks modeling · 3D printed prototyping

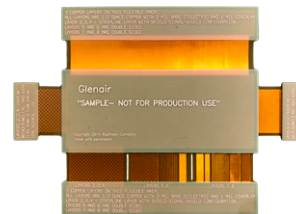
MODELING  
AND 3D PRINT

Optimized for **Rapid Prototyping**

- 3D representation of flex assemblies using SolidWorks
- 3D printed “paper doll” outline mockups for fit checks with copper clad DuPont™ Kapton® to simulate actual flexibility
- Incorporation of customer-supplied wiring diagram and chassis information in laser-cut mechanical samples



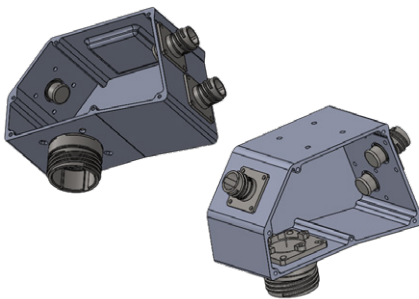
Example SolidWorks and 3D printed paper doll prototype mockups produced by Glenair's Integrated Flex Assembly team—typical turnaround 2-3 days upon receipt of request for most application designs



Complimentary quick-turn mockups produced by by Glenair: 28-layer rigid flex, and 12-layer multibranch rigid flex

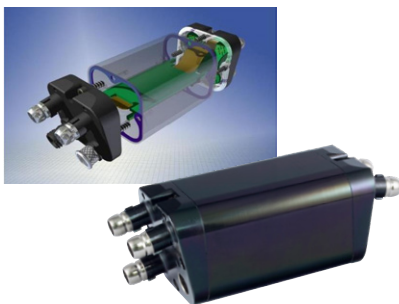
HD Stacker board-to-board connector/flex mockup

3D MODELING OF BOX BUILDS FOR OPTIMAL INTEGRATION OF I/O INTERCONNECTS AND FLEX CIRCUIT ASSEMBLIES



- Customer-supplied STEP file of box with panel cutouts
- Glenair value-added 3D model with connector size and flange modifications

In this example, customer supplied a STEP file of a box enclosure with existing panel cutouts. The Glenair engineering team used SolidWorks to design a specially-modified connector flange, enabling the use of a smaller, higher-density connector, for significant size-and weight-savings.



- Electronic box builds are supported by software-based design and prototyping of I/O connectors and integrated flex circuits
- Process leads to optimized location and routing of internal assembly and I/O interface

This integrated system enclosure, complete with printed circuitry, I/O connectors, and power modules was designed and modeled in SolidWorks prior to production manufacturing.

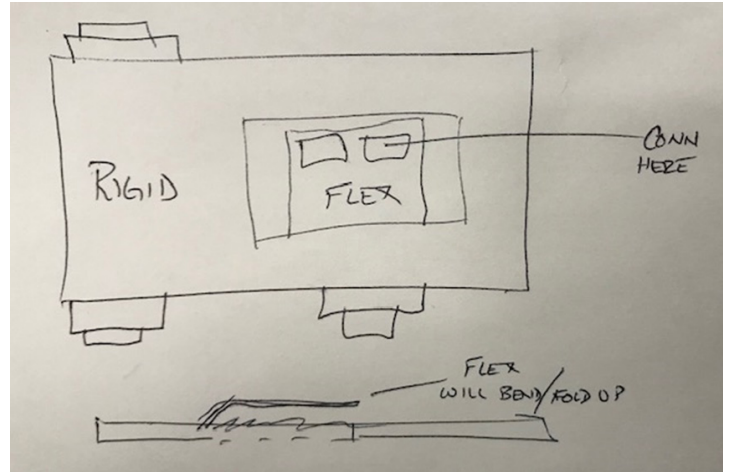
*DuPont™ and Kapton® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company.*

## Typical design and production process

### GLENAIR INTEGRATED PCB/FLEX ENGINEERING

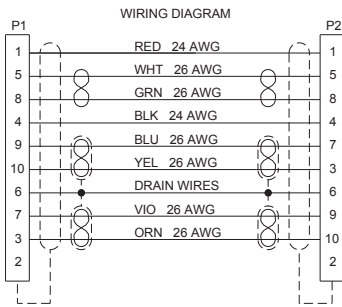
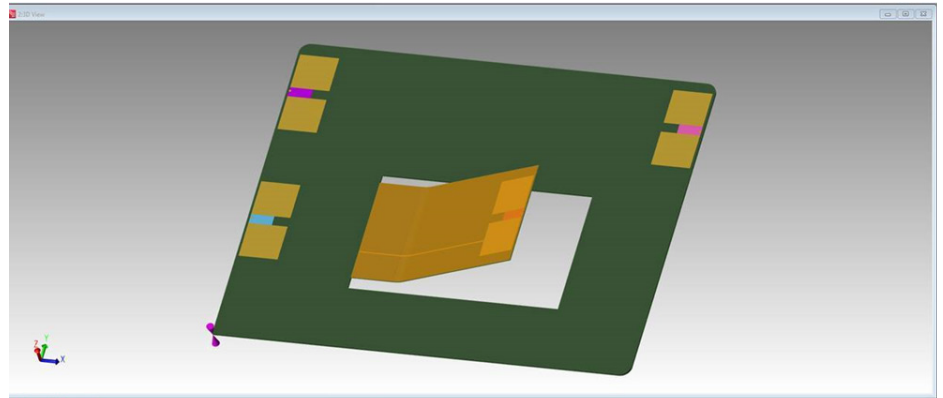
### From Concept to Design

The **mechanical schematic design** process typically takes one of two forms: either the customer presents a fully-realized mechanical design, or as is often the case, the process begins with a “napkin sketch” of the project. Here is an example of just such a rough design that kicked off a rigid-flex circuit assembly development process.

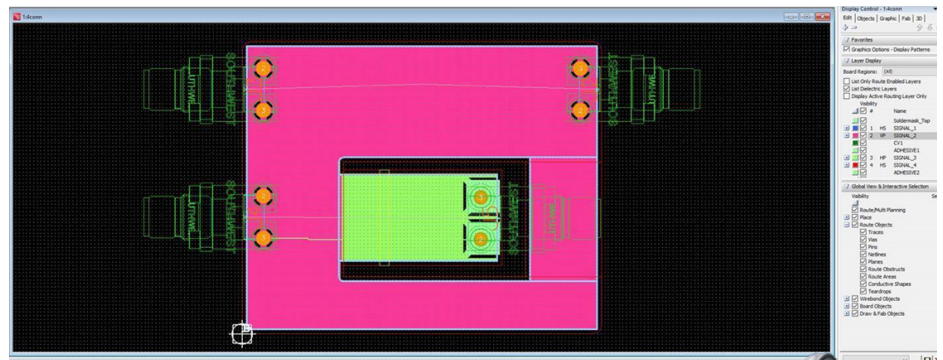


Glenair engineers utilized our **Altium** software to create a functional and problem-free mechanical design for customer review and modification prior to starting the build.

# Altium



**Electricals:** The next step is to define the electricals. To approximate layer count, we need a wiring diagram “schematic” complete with signal types, currents, and shielding requirements. This is also used to determine ROM pricing. In this project, work to this point was completed in just 3 weeks. With the final design approved, we were ready for production manufacturing.



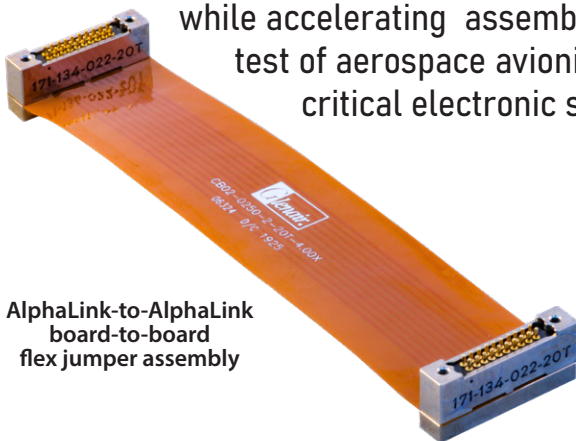
**Validation test requirements:** Glenair offers complete generation of PCB/flex fabrication data packages including component-level documentation. Most flex customers specify validation testing as a required part of the documentation package. Tests may include DWV/IR, continuity, impedance (eye pattern), and others.



Rugged I/O to spring-pin contact flex assemblies



AlphaLink® SL flex jumpers: Compact point-to-point assemblies that combine lightweight flex circuitry with Glenair signature I/O and board-level connectors. These turnkey jumper assemblies reduce system size and weight while accelerating assembly qualification and test of aerospace avionics and other mission-critical electronic systems.



AlphaLink-to-AlphaLink  
board-to-board  
flex jumper assembly

A high-availability, fast-turnaround catalog solution, Glenair AlphaLink flex jumpers offer superior electrical and mechanical performance compared to conventional wire harnessing

- Chemically etched, copper-clad polyimide flex circuit jumpers offer excellent temperature tolerance, dimensional stability, and reduced size and weight
- All designs utilize AlphaLink®SL board connectors with solder-free spring-loaded contacts
- Glenair small form-factor Mighty Mouse, Micro-Crimp, HiPer-D, and SuperFly I/O connectors
- Designed for optimal electrical performance, including matched-impedance applications

Rugged I/O to spring-pin contact flex assemblies

POINT-TO-POINT JUMPER  
SELECTION GUIDE

AlphaLink® SL Solder-Free I/O-to-Board



Series 89 Circular Nanominiature-to-AlphaLink SL flex jumper with breakaway or threaded I/O coupling in 6 contact arrangements



Series 88 SuperFly-to-AlphaLink SL flex jumper with quick-disconnect or threaded I/O coupling in 7 contact arrangements



Series 801 Mighty Mouse-to-AlphaLink SL flex jumper with double-start ACME thread I/O coupling in 8 contact arrangements



Series 804 Mighty Mouse-to-AlphaLink SL flex jumper with push-pull quick-disconnect QDC I/O coupling in 8 contact arrangements



Series 89 Rectangular Nanominiature-to-AlphaLink SL flex jumper (rear-panel-mount plug or receptacle) in 7 contact arrangements



High-reliability Micro-D MIL-DTL-83513 type rectangular-to-AlphaLink SL flex jumper in 7 contact arrangements



Series 79 Micro-Crimp advanced-performance rectangular-to-AlphaLink SL flex jumper in 7 contact arrangements



Series 28 HiPer-D-to-AlphaLink SL flex jumper (MIL-DTL-24308 intermateable rectangular) in 6 contact arrangements

## CB02-0250: AlphaLink® SL connector double-ended flex assembly



HOW TO ORDER						
<b>Sample Part Number</b>	CB02-0250	-2	-20	T	-6.00	X
<b>Basic Part Number</b>	Flex jumper: AlphaLink® connectors					
<b>Connector Material / Finish</b>	2 = Aluminum Alloy / Electroless Nickel 5 = Aluminum Alloy / Gold					
<b>Number of Nets / Pins</b>	See PCB Layout table below					
<b>Hardware / Thru-Hole</b>	T = Threaded thru hole <b>Omit</b> for thru hole					
<b>Assembly Length</b>	In Inches					
<b>Connector Configuratoion</b>	X = Same Side Y = Opposite Sides					

ALPHALINK PRINTED CIRCUIT BOARD LAYOUT - SPRING-PIN SIDE					
4 CONTACTS	8 CONTACTS	10 CONTACTS	12 CONTACTS	16 CONTACTS	
20 CONTACTS	24 CONTACTS	28 CONTACTS	30 CONTACTS		
32 CONTACTS	36 CONTACTS	40 CONTACTS			

### ALPHALINK FLEX JUMPERS

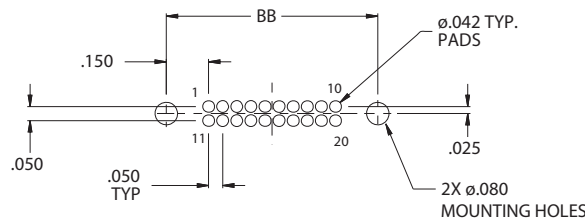
AlphaLink® board level connectors available in 6 contact arrangements, terminated to rugged polyimide-based flex

### FLEX PERFORMANCE

- Bend radius is 6 to 10 X flex thickness.
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Flex cables are terminated from the I/O to B/L connector on a 1 to 1 connection (unused B/L contacts are not connected)
- Workmanship shall be IAW IPC-6013, Class 2.

### NOTES

- Contacts mapped 1-to-1. For alternative wire schedules, please consult factory.
- AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

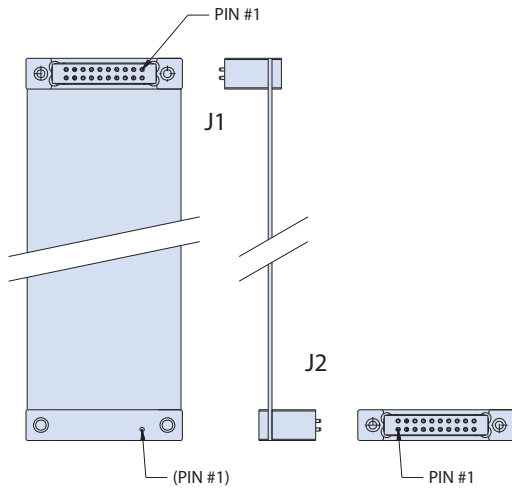


RECOMMENDED PCB LAYOUT  
(MATES TO SLC SIDE OF CONNECTOR)

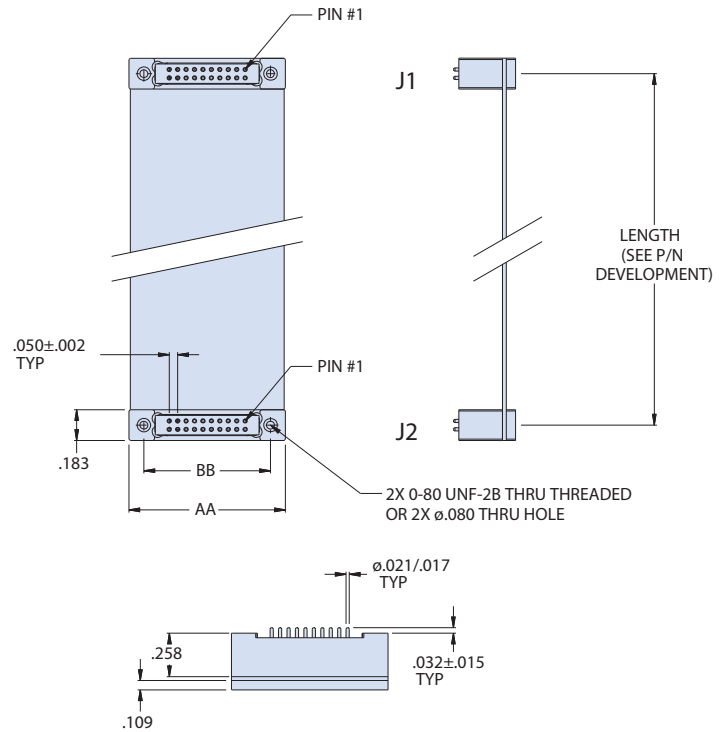
## CB02-0250: AlphaLink® SL connector double-ended flex assembly

TABLE II: LAYOUT AND DIMENSIONS

### "Y" CONNECTOR CONFIGURATION



### "X" CONNECTOR CONFIGURATION



No. of contacts	AA	BB
4	0.527 (13.4)	0.350 (8.9)
8	0.627 (15.9)	0.450 (11.4)
10	0.677 (17.2)	0.500 (12.7)
16	0.827 (21.0)	0.650 (16.5)
20	0.927 (23.5)	0.750 (19.1)
28	1.127 (28.6)	0.950 (24.1)
32	1.227 (31.2)	1.050 (26.7)
40	1.427 (36.2)	1.250 (31.8)

## CB02-0298 Micro-D MWDM-CBS Vertical Board-Mount double-ended flex assembly

HOW TO ORDER	
<b>Sample Part Number</b>	<b>CB02-0298</b> -2 -9 PU 3 -S
<b>Basic Part Number</b>	Flex Jumper: MWDM-CBS Vertical Board-Mount Micro-D I/O connector double-ended flex assembly
<b>Connector Material / Finish</b>	<b>2</b> = Aluminum / Nickel <b>3</b> = Stainless Steel / Passivated <b>4</b> = Aluminum / Black Anodize <b>5</b> = Aluminum Alloy / Gold
<b>Connector Shell Size</b>	<b>-9, -15, -21, -25, -31, -37</b>
<b>Hardware Option</b>	<b>PU</b> = Jackpost with Threaded Insert <b>NU</b> = Threaded Insert only <b>M</b> = Hex Head Jackscrew <b>Omit</b> for through-hole
<b>Assembly Length</b>	<b>3</b> = 3.00 ± .05 inches <b>6</b> = 6.00 ± .05 inches <b>12</b> = 12.00 ± .05 inches
<b>Shielding</b>	<b>-S</b> = Shielded assembly <b>Omit</b> = unshielded

### MICRO-D FLEX JUMPERS

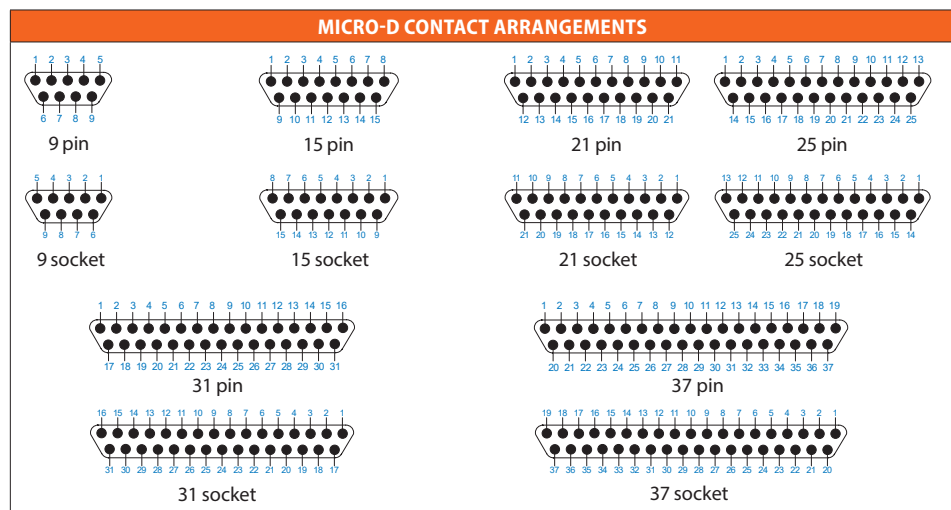
Glenair MWDM vertical board-mount Micro-D connectors available in 12 contact arrangements, terminated to rugged polyimide-based flex.

### FLEX PERFORMANCE

- Flex fabricated IAW IPC-6013, Class 3, and assembled IAW J-STD-001, Class 3, using SN63/PB37 solder.
- Flex cables are terminated from the I/O connector to the B/L connector on a 1-to-1 connection (extra pin on B/L connector not connected)
- Nets/connections rated for 100mA max. current
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Bend radius is 6X to 10X flex thickness.

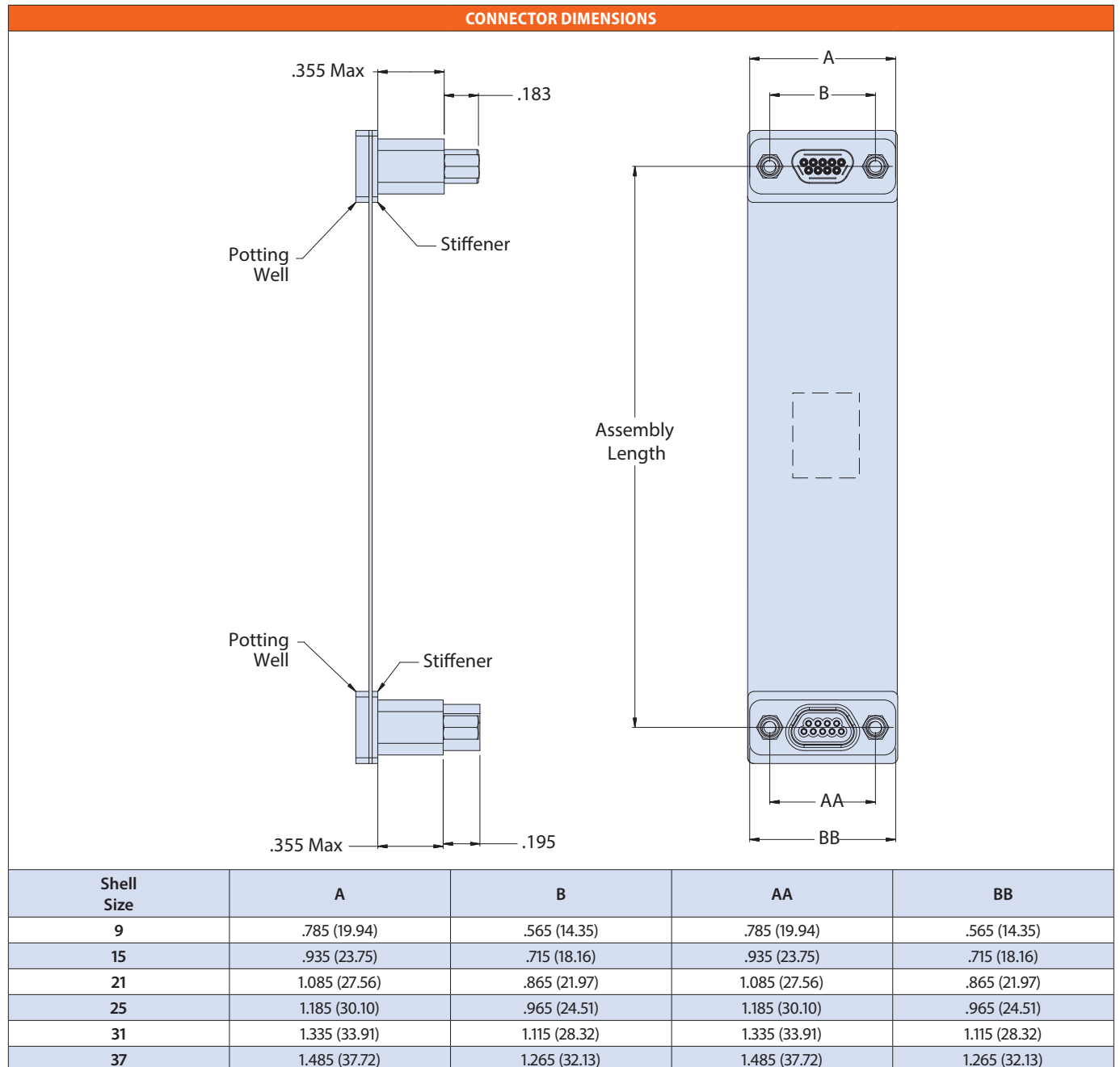
### NOTES

- MWDM-CBS vertical board-mount Micro-D connector, designed to meet performance requirements and interface dimensions of MIL-DTL-83513.
- Contacts mapped 1-to-1. For alternative wire schedules, please consult factory.





# CB02-0298 Micro-D MWDM-CBS Vertical Board-Mount double-ended flex assembly



## CB02-0299 Micro-D MWDM-CBR Right-Angle Thru-Hole double-ended flex assembly

HOW TO ORDER						
<b>Sample Part Number</b>	<b>CB02-0299</b>	<b>-2</b>	<b>-9</b>	<b>P</b>	<b>3</b>	<b>-S</b>
<b>Basic Part Number</b>	Flex Jumper: MWDM-CBR Right-Angle Thru-Hole Micro-D I/O connector double-ended flex assembly					
<b>Connector Material / Finish</b>	<b>2</b> = Aluminum / Nickel <b>3</b> = Stainless Steel / Passivated <b>4</b> = Aluminum / Black Anodize <b>5</b> = Aluminum Alloy / Gold					
<b>Connector Shell Size</b>	<b>-9, -15, -21, -25</b>					
<b>Hardware Option</b>	<b>P</b> = Jackpost <b>Omit</b> for none					
<b>Assembly Length</b>	<b>3</b> = 3.00 ± .05 inches <b>6</b> = 6.00 ± .05 inches <b>12</b> = 12.00 ± .05 inches					
<b>Shielding</b>	<b>-S</b> = Shielded assembly <b>Omit</b> = unshielded					

### MICRO-D FLEX JUMPERS

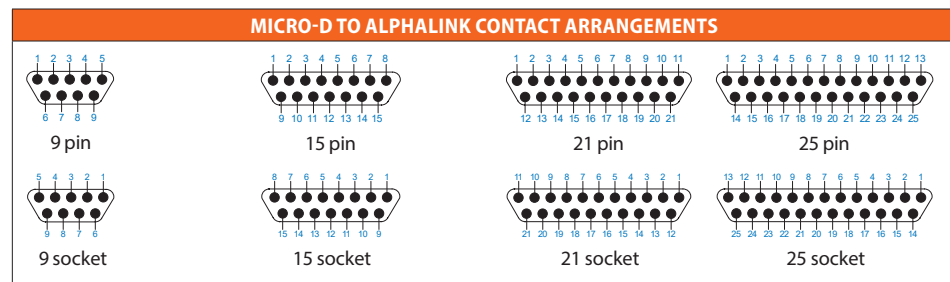
Glenair MWDM right-angle thru-hole Micro-D connectors available in 12 contact arrangements, terminated to rugged polyimide-based flex.

### FLEX PERFORMANCE

- Flex fabricated IAW IPC-6013, Class 3, and assembled IAW J-STD-001, Class 3, using SN63/PB37 solder.
- Flex cables are terminated from the I/O connector to the B/L connector on a 1-to-1 connection (extra pin on B/L connector not connected)
- Nets/connections rated for 100mA max. current
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Bend radius is 6X to 10X flex thickness.

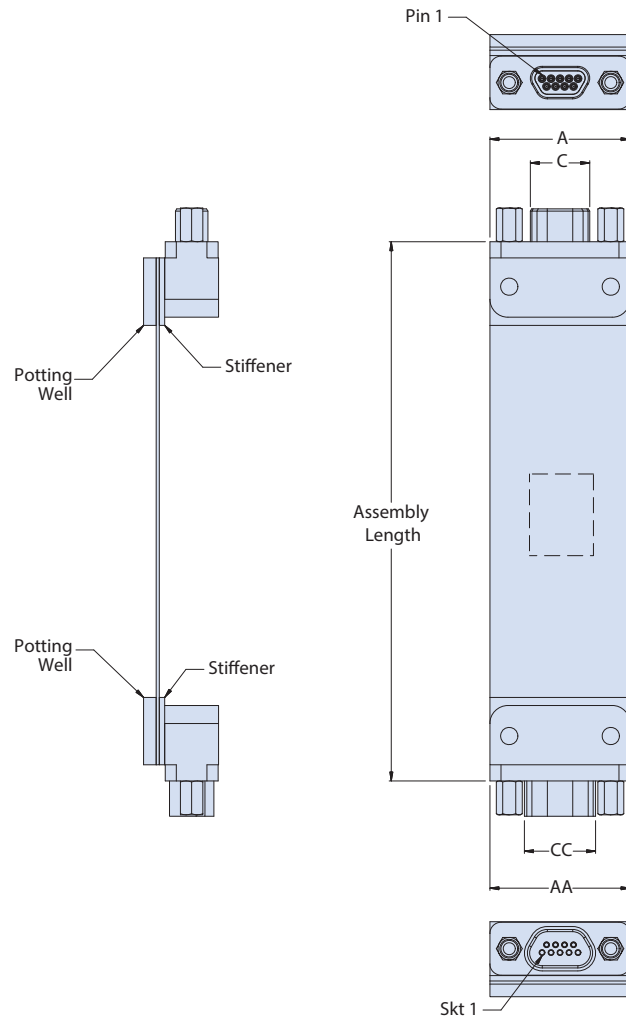
### NOTES

- MWDM-CBR right-angle thru-hole Micro-D connector, designed to meet performance requirements and interface dimensions of MIL-DTL-83513.
- Contacts mapped 1-to-1. For alternative wire schedules, please consult factory.



# CB02-0299 Micro-D MWDM-CBR Right-Angle Thru-Hole double-ended flex assembly

CONNECTOR DIMENSIONS



Shell Size	A	C	AA	CC
9	.787 (19.99)	.333 (8.46)	.787 (19.99)	.400 (10.16)
15	.937 (23.80)	.483 (12.27)	.937 (23.80)	.551 (14.00)
21	1.087 (27.61)	.633 (16.08)	1.087 (27.61)	.701 (17.81)
25	1.187 (30.15)	.733 (18.62)	1.187 (30.15)	.801 (20.35)

## CB02-0300 GRPM rear-panel-mount Micro-D I/O to AlphaLink® SL board-level assembly



### MICRO-D FLEX JUMPERS

Glenair GRPM Micro-D connectors available in 6 contact arrangements, terminated with rugged polyimide-based flex to AlphaLink® board level connectors.

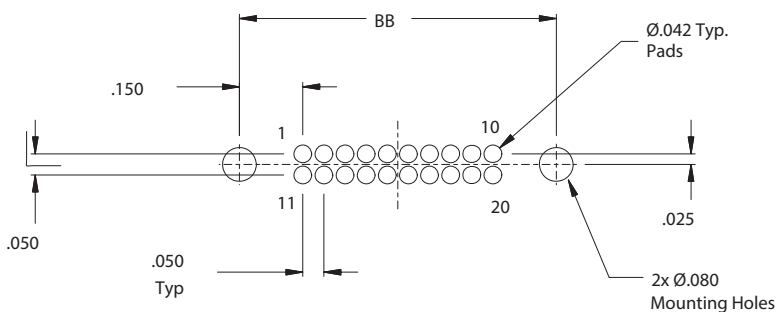
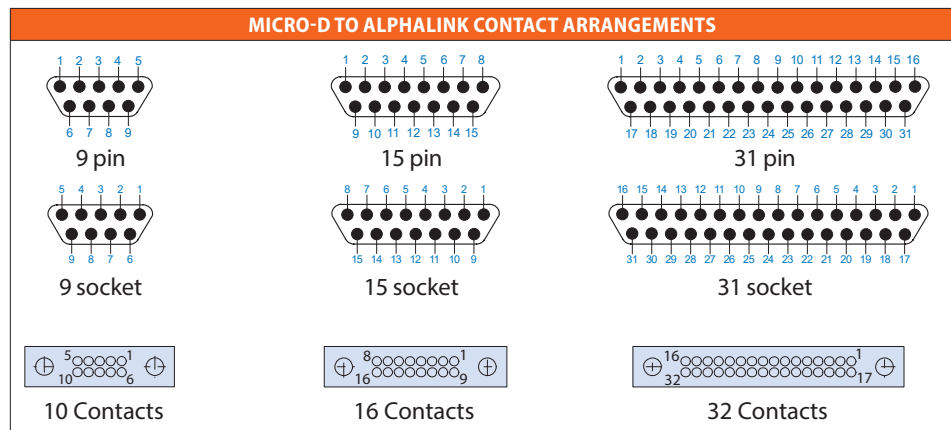
### FLEX PERFORMANCE

- Flex fabricated IAW IPC-6013, Class 3, and assembled IAW J-STD-001, Class 3, using SN63/PB37 solder.
- Nets/connections rated for 100mA max. current
- Typical flex will be  $.01 \pm .005$  thick, rugged, potted, polyimide-based flex.
- Bend radius is 6X to 10X flex thickness.

### NOTES

- I/O GRPM rear-panel-mount Micro-D connector, designed to meet performance requirements and interface dimensions of MIL-DTL-83513.
- Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). For alternative wire schedules, please consult factory.
- Unused Cavities in connectors to be populated with contacts.
- B/L AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

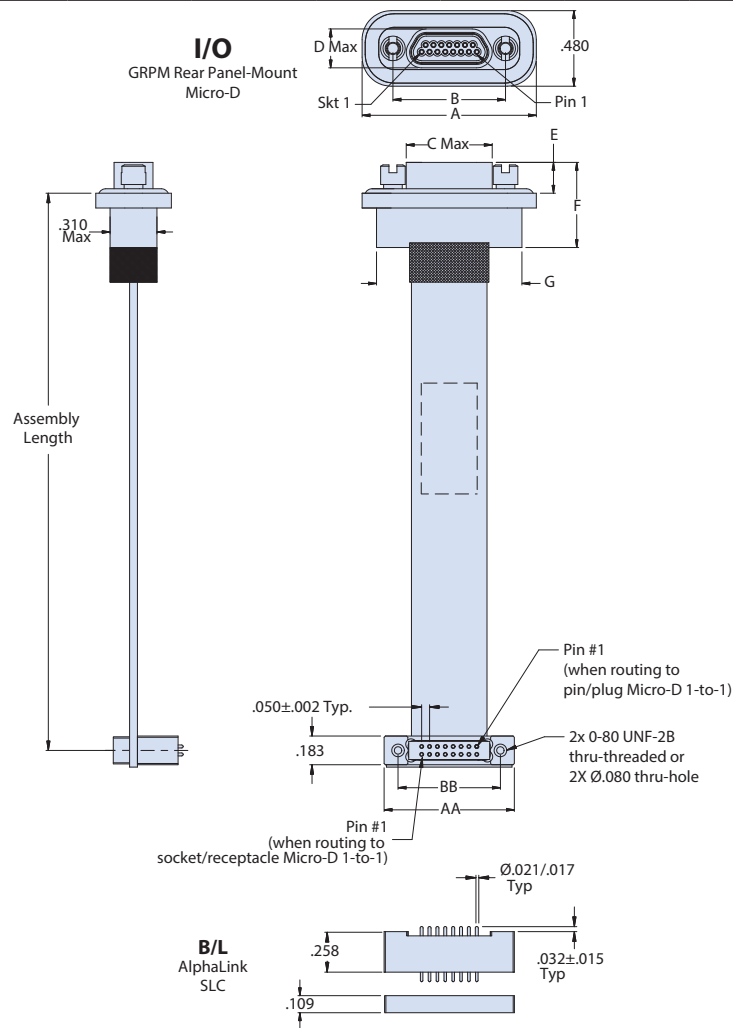
HOW TO ORDER	
<b>Sample Part Number</b>	CB02-0300 -2 -15 S R1 -2 T -6
<b>Basic Part Number</b>	Flex Jumper: GRPM Panel-Mount Micro-D I/O connector to Series 171 AlphaLink® SL B/L connector
<b>I/O Connector Material / Finish</b>	1 = Aluminum Alloy / Cadmium 2 = Aluminum Alloy / Electroless Nickel 3 = Stainless Steel / Passivated 5 = Aluminum Alloy / Gold 33 = Aluminum Alloy / Nickel/PTFE
<b>I/O Connector Shell Size</b>	-9, -15, -31
<b>I/O Contact / Connector Gender</b>	P = Pin/Plug S = Socket/Receptacle
<b>I/O Hardware Option</b>	R1 = Jackpost for .032" panel R2 = Jackpost for .047" panel R3 = Jackpost for .062" panel R4 = Jackpost for .093" panel R5 = Jackpost for .125" panel R6 = Jackpost for .080" panel
<b>AlphaLink B/L Connector Material / Finish</b>	2 = Aluminum Alloy / Electroless Nickel 5 = Aluminum Alloy / Gold
<b>AlphaLink Thru-Hole/ Hardware Option</b>	T = Threaded thru hole Omit for thru hole
<b>Assembly Length</b>	3 = 3.00 ± .05 inches 6 = 6.00 ± .05 inches 12 = 12.00 ± .05 inches



Recommended PCB Layout  
Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). Consult Glenair for alternative wire schedules.

## CB02-0300 GRPM rear-panel-mount Micro-D I/O to AlphaLink® SL board-level assembly

### CONNECTOR DIMENSIONS



#### MICRO-D I/O CONNECTOR

#### ALPHALINK SL BOARD CONNECTOR

Shell Size	A ±.005	B ±.003	C Max	D Max	E±.003	F±.005	G±.005	Size	AA	BB
9P	.960 (24.4)	.565 (14.4)	.334 (8.5)	.184 (4.7)	.183 (4.6)	.529 (13.4)	.790 (20.1)	10	.677 (17.2)	.500 (12.7)
9S	.960 (24.4)	.565 (14.4)	.400 (10.2)	.250 (6.4)	.195 (5.0)	.541 (13.7)	.790 (20.1)			
15P	1.110 (28.2)	.715 (18.2)	.484 (12.3)	.184 (4.7)	.183 (4.6)	.529 (13.4)	.940 (23.9)	16	.827 (21.0)	.650 (16.5)
15S	1.110 (28.2)	.715 (18.2)	.550 (14.0)	.250 (6.4)	.195 (5.0)	.541 (13.7)	.940 (23.9)			
31P	1.510 (38.4)	1.115 (28.3)	.884 (22.5)	.184 (4.7)	.183 (4.6)	.529 (13.4)	1.340 (34.0)	32	1.227 (31.2)	1.050 (26.7)
31S	1.510 (38.4)	1.115 (28.3)	.950 (24.1)	.250 (6.4)	.195 (5.0)	.541 (13.7)	1.340 (34.0)			

## CB02-0301 Nanominiature Dual-Row I/O to AlphaLink® SL board-level assembly



### NANO FLEX JUMPERS

Glenair Series 89 Nanominiature connectors available in 6 contact arrangements, terminated with rugged polyimide-based flex to AlphaLink® board level connectors.

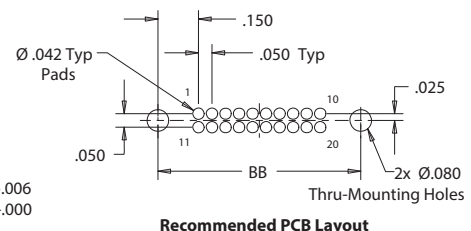
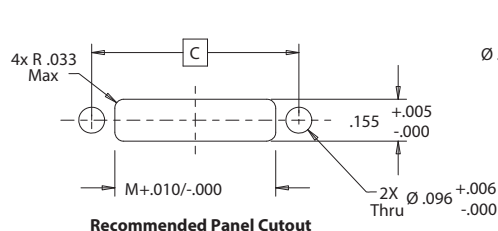
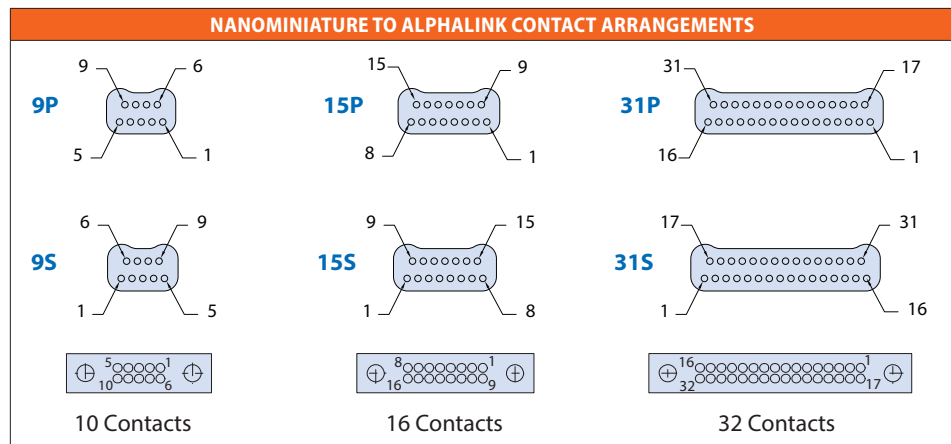
### FLEX PERFORMANCE

- Flex fabricated IAW IPC-6013, Class 3, and assembled IAW J-STD-001, Class 3, using SN63/PB37 solder.
- Nets/connections rated for 100mA max. current
- Typical flex will be  $.01 \pm .005$  thick, rugged, potted, polyimide-based flex.
- Bend radius is 6X to 10X flex thickness.

### NOTES

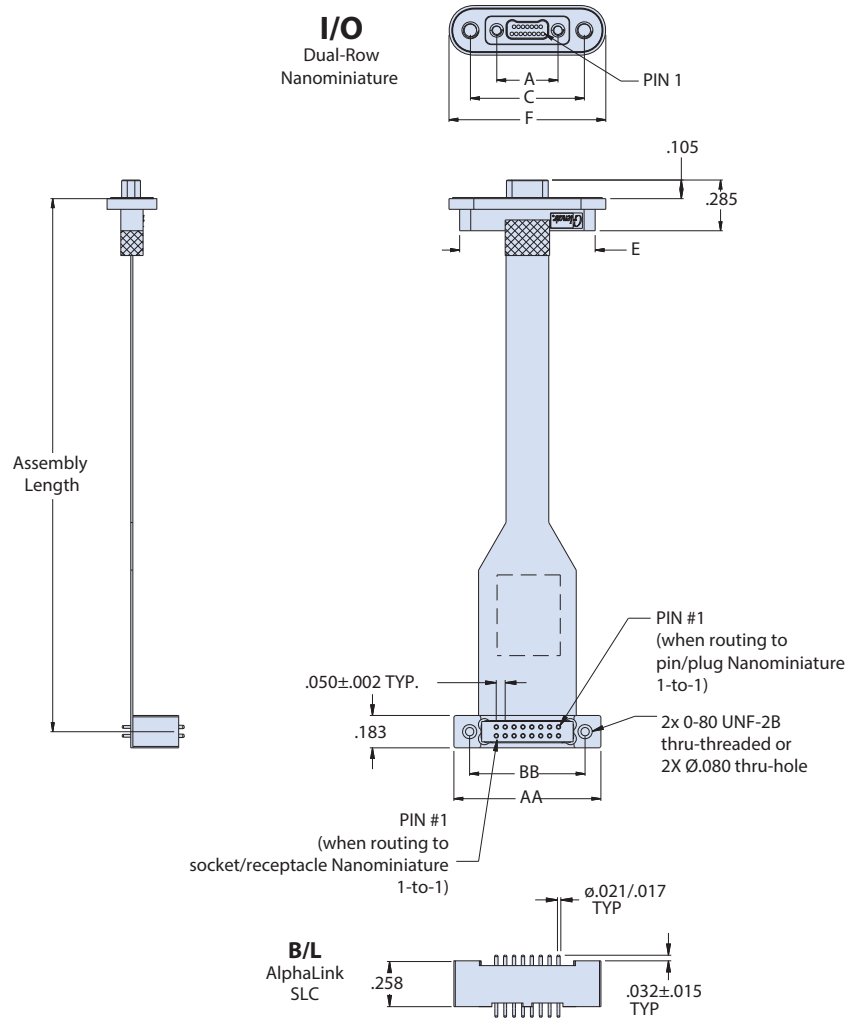
- I/O Series 89 receptacle performance IAW MIL-DTL-32139
- Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). For alternative wire schedules, please consult factory.
- Unused Cavities in connectors to be populated with contacts.
- B/L AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

HOW TO ORDER	
<b>Sample Part Number</b>	CB02-0301 -S -15 P 01 -1 T -6
<b>Basic Part Number</b>	Flex Jumper: Nanominiature Dual-Row I/O connector to Series 171 AlphaLink® SL B/L connector
<b>I/O Connector Material / Finish</b>	T = Titanium / Unplated S = Stainless Steel / Passivated
<b>I/O Connector Shell Size</b>	-9, -15, -31
<b>I/O Contact / Connector Gender</b>	P = Pin/Plug S = Socket/Receptacle
<b>I/O Gasket Material</b>	00 = No Gasket 01 = Fluorosilicone IAW MIL-DTL-25988, Type II, Class I, Grade 70 02 = Passivated Silver-Plated Aluminum-filled Fluorosilicone IAW MIL-DTL-83528 03 = Nickel-plated Aluminum-filled Fluorosilicone (CHO-SEAL 6503 or equivalent)
<b>AlphaLink B/L Connector Material / Finish</b>	2 = Aluminum Alloy / Electroless Nickel 5 = Aluminum Alloy / Gold
<b>AlphaLink Thru-Hole/ Hardware Option</b>	T = Threaded thru hole Omit for thru hole
<b>Assembly Length</b>	3 = $3.00 \pm .05$ inches 6 = $6.00 \pm .05$ inches 12 = $12.00 \pm .05$ inches



# CB02-0301 Nanominiature Dual-Row I/O to AlphaLink® SL board-level assembly

## CONNECTOR DIMENSIONS



### NANOMINIATURE I/O CONNECTOR

### ALPHALINK SL BOARD CONNECTOR

Shell Size	A Bsc.	C Bsc.	E	F	Size	AA	BB
9P	.270 (6.9)	.566 (14.4)	.688 (17.5)	.808 (20.5)	10	.677 (17.2)	.500 (12.7)
9S	.270 (6.9)	.566 (14.4)	.688 (17.5)	.808 (20.5)			
15P	.345 (8.8)	.641 (16.28)	.763 (19.38)	.883 (22.43)	16	.827 (21.0)	.650 (16.5)
15S	.345 (8.8)	.641 (16.28)	.763 (19.38)	.883 (22.43)			
31P	.545 (13.8)	.841 (21.4)	.963 (24.5)	1.083 (27.5)	32	1.227 (31.2)	1.050 (26.7)
31S	.545 (13.8)	.841 (21.4)	.963 (24.5)	1.083 (27.5)			

## 893-012 Circular Nanominiature breakaway rear-panel-mount receptacle connector to AlphaLink® SL flex jumper

HOW TO ORDER	
<b>Sample Part Number</b>	893-012 -19 N A2 -20 2 T -12 S
<b>Basic Part Number</b>	Series 89 Circular Nanominiature Breakaway I/O receptacle to Series 171 AlphaLink® SL
<b>I/O Contact Arrangement</b>	-4, -7, -19, -37, -44, -55
<b>I/O Polarization</b>	N = Normal A = Alternate
<b>I/O Shell and Spanner Nut Material and Finish</b>	A2 = Aluminum / Electroless Nickel A5 = Aluminum / Gold over Nickel S1 = Stainless Steel / Zinc Cobalt (Black) S2 = Stainless Steel / Passivated
<b>AlphaLink® Layout</b>	-4, -8, -20, -40
<b>AlphaLink® Finish</b>	2 = Nickel 5 = Gold
<b>AlphaLink Thru-Hole/Hardware Option</b>	T = Threaded thru hole Omit for thru hole
<b>Assembly Length (L)</b>	3 = 3.00 ± .05 inches 6 = 6.00 ± .05 inches 12 = 12.00 ± .05 inches
<b>Optional Shielding</b>	S = With shielding Omit for none

### NANO FLEX JUMPERS

Glenair Series 89 Circular Nanominiature connectors available in 6 contact arrangements, terminated with rugged polyimide-based flex to AlphaLink® board level connectors.

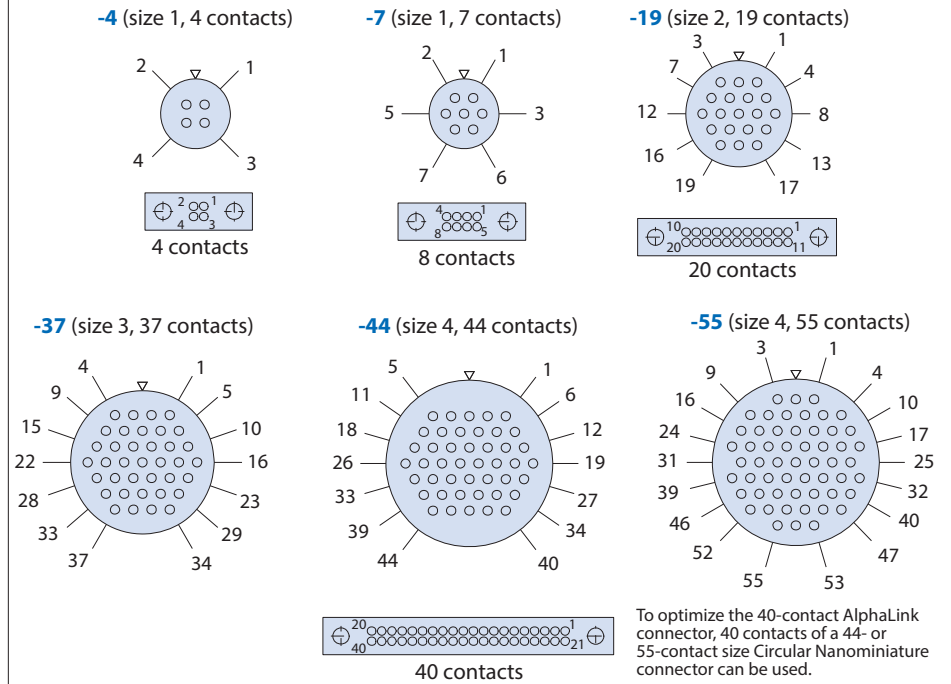
### FLEX PERFORMANCE

- EMI shielding film will be used when shielding option is chosen
- Bend radius is 6 to 10 X flex thickness.
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Workmanship shall be IAW IPC-6013, Class 2.

### NOTES

- I/O Series 89 receptacle performance IAW MIL-DTL-32139
- Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). For alternative wire schedules, please consult factory.
- Unused Cavities in connectors to be populated with contacts.
- B/L AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

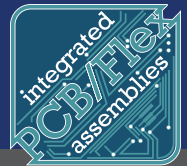
### CIRCULAR NANOMINIATURE TO ALPHALINK CONTACT ARRANGEMENTS



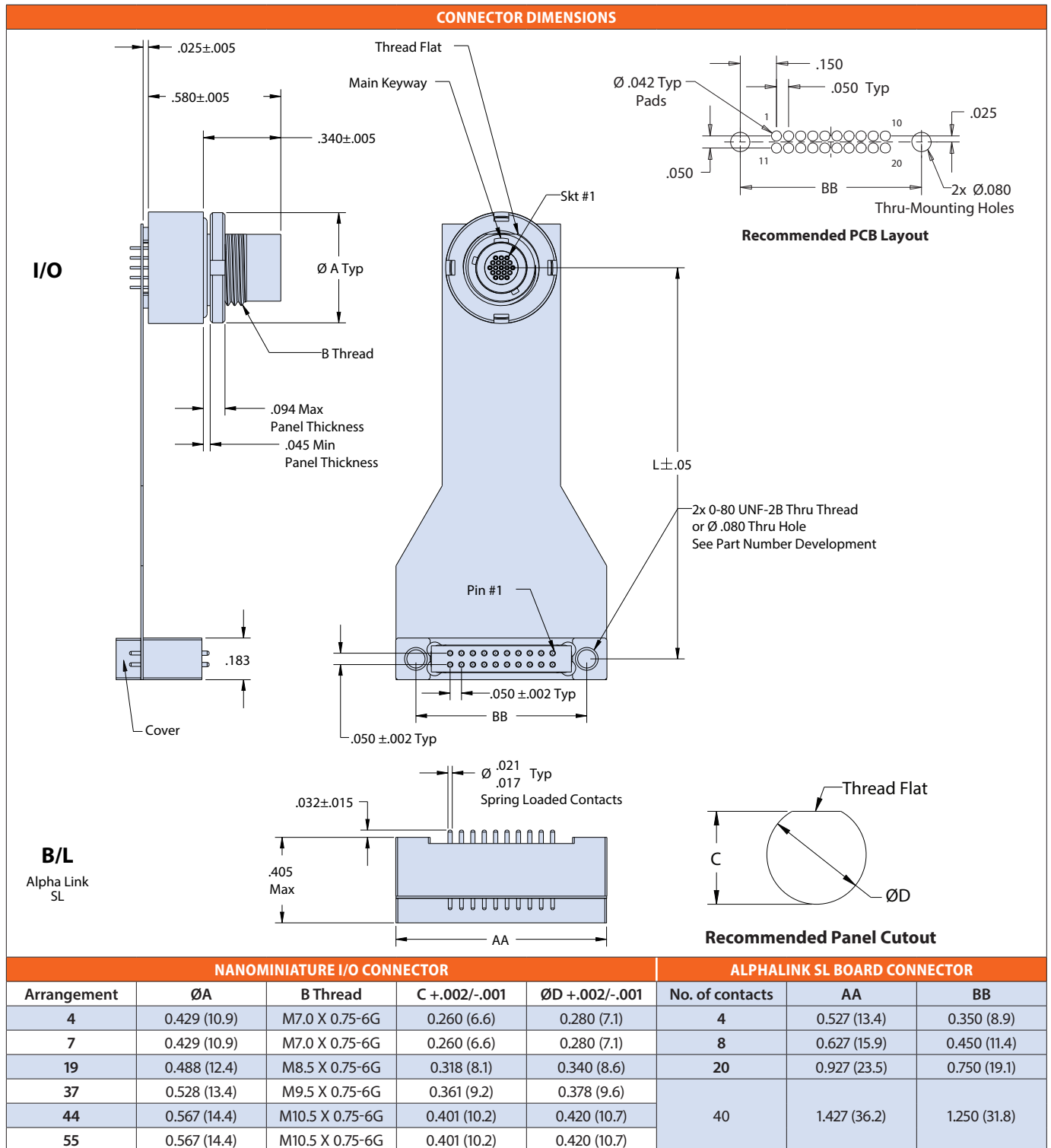
POLARIZATION POSITIONS		Layout	Polarization	A°	B°	Layout	Polarization	A°	B°
		1-4	N	150	210	3-37	N	150	210
			A	75	210		A	75	210
		1-7	N	95	230	4-44	N	150	210
			A	140	275		A	75	210
		2-19	N	150	210	4-55	N	95	230
			A	75	210		A	140	275



# TURNKEY Flex Jumper Assemblies



## 893-012 Circular Nanominiature breakaway rear-panel-mount receptacle connector to AlphaLink® SL flex jumper



## 893-013 Circular Nanominiature threaded coupling rear-panel-mount receptacle connector to AlphaLink® SL flex jumper



### NANO FLEX JUMPERS

Glenair Series 89 Circular Nanominiature connectors available in 6 contact arrangements, terminated with rugged polyimide-based flex to AlphaLink® board level connectors.

### FLEX PERFORMANCE

- EMI shielding film will be used when shielding option is chosen
- Bend radius is 6 to 10 X flex thickness.
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Workmanship shall be IAW IPC-6013, Class 2.

### NOTES

- I/O Series 89 receptacle performance IAW MIL-DTL-32139
- Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). For alternative wire schedules, please consult factory.
- Unused Cavities in connectors to be populated with contacts.
- B/L AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

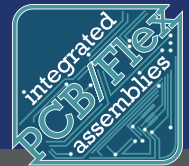
HOW TO ORDER	
<b>Sample Part Number</b>	893-013 -19 N A2 -20 2 T -12 S
<b>Basic Part Number</b>	Series 89 Circular Nanominiature Threaded Coupling I/O receptacle to Series 171 AlphaLink® SL
<b>I/O Contact Arrangement</b>	-4, -7, -19, -37, -44, -55
<b>I/O Polarization</b>	N = Normal A = Alternate
<b>I/O Shell and Spanner Nut Material and Finish</b>	A2 = Aluminum / Electroless Nickel A5 = Aluminum / Gold over Nickel S1 = Stainless Steel / Zinc Cobalt (Black) S2 = Stainless Steel / Passivated
<b>AlphaLink® Layout</b>	-4, -8, -20, -40
<b>AlphaLink® Finish</b>	2 = Nickel 5 = Gold
<b>AlphaLink Thru-Hole/Hardware Option</b>	T = Threaded thru hole Omit for thru hole
<b>Assembly Length (L)</b>	3 = 3.00 ± .05 inches 6 = 6.00 ± .05 inches 12 = 12.00 ± .05 inches
<b>Optional Shielding</b>	S = With shielding Omit for none

CIRCULAR NANOMINIATURE TO ALPHALINK CONTACT ARRANGEMENTS		
<p><b>-4</b> (size 1, 4 contacts)</p> <p>4 contacts</p>	<p><b>-7</b> (size 1, 7 contacts)</p> <p>8 contacts</p>	<p><b>-19</b> (size 2, 19 contacts)</p> <p>20 contacts</p>
<p><b>-37</b> (size 3, 37 contacts)</p> <p>40 contacts</p>	<p><b>-44</b> (size 4, 44 contacts)</p> <p>40 contacts</p>	<p><b>-55</b> (size 4, 55 contacts)</p> <p>40 contacts</p>

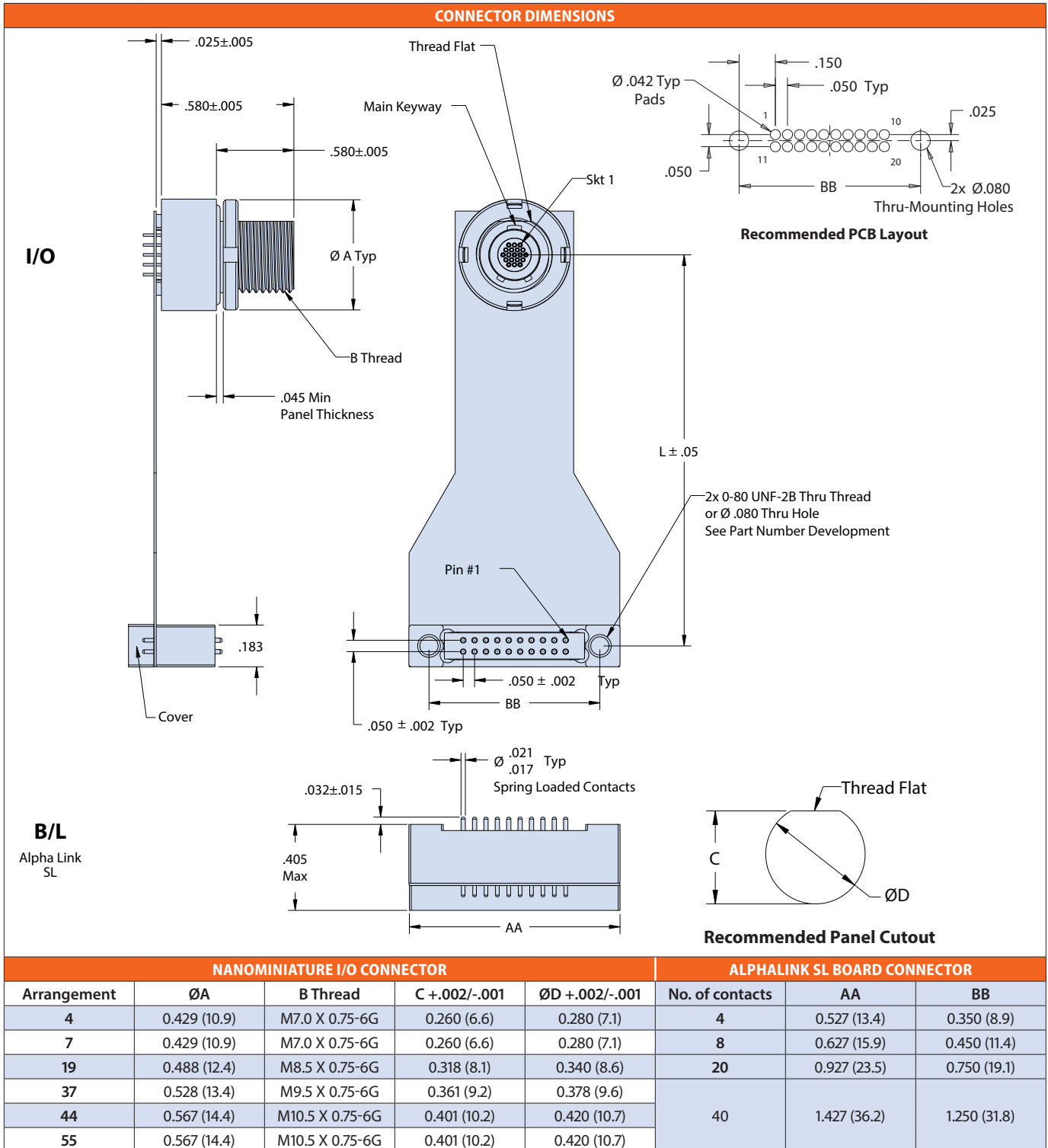
To optimize the 40-contact AlphaLink connector, 40 contacts of a 44- or 55-contact size Circular Nanominiature connector can be used.

POLARIZATION POSITIONS		Layout	Polarization	A°	B°	Layout	Polarization	A°	B°
	<p>Main Key / Keyway</p>	1-4	N	150	210	3-37	N	150	210
			A	75	210		A	75	210
		1-7	N	95	230	4-44	N	150	210
			A	140	275		A	75	210
		2-19	N	150	210	4-55	N	95	230
			A	75	210		A	140	275

# TURNKEY Flex Jumper Assemblies



## 893-013 Circular Nanominiature threaded coupling rear-panel-mount receptacle connector to AlphaLink® SL flex jumper



## 880-034 SuperFly quick-disconnect rear-panel-mount receptacle connector to AlphaLink® SL flex jumper



### SUPERFLY FLEX JUMPERS

Glenair Series 89 SuperFly™ nano miniature connectors available in 7 contact arrangements, terminated with rugged polyimide-based flex to AlphaLink® board level connectors.

### FLEX PERFORMANCE

- EMI shielding film will be used when shielding option is chosen
- Bend radius is 6 to 10 X flex thickness.
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Workmanship shall be IAW IPC-6013, Class 2.

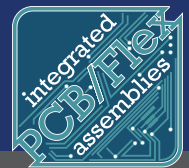
### NOTES

- I/O Series 88 QDC receptacle
- Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). For alternative wire schedules, please consult factory.
- Unused Cavities in connectors to be populated with contacts.
- B/L AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

HOW TO ORDER	
<b>Sample Part Number</b>	<b>880-034R A -F22N -M -2 T -12 S</b>
<b>Basic Part Number</b>	Series 88 SuperFly QDC I/O receptacle to Series 171 AlphaLink® SL
<b>I/O Insert Configuration</b>	<b>A</b> = Unshrouded Nano socket contacts <b>B</b> = Shrouded Nano TwistPin contacts
<b>I/O Shell Size / Contact Arrangement</b>	<b>B7N, C10N, E19N, F22N, G31N, H37N, J44N</b>
<b>I/O Shell Material/Finish</b>	<b>M</b> = Aluminum / Electroless Nickel <b>ZR</b> = Aluminum / Black Zinc Nickel over Electroless Nickel <b>MT</b> = Aluminum / Nickel-PTFE <b>NF</b> = Aluminum / Olive Drab over Cadmium <b>ZC</b> = Stainless Steel / Zinc Cobalt (Black) <b>ZK</b> = Stainless Steel / Passivated <b>ZMT</b> = Stainless Steel / Nickel Fluoropolymer
<b>AlphaLink® Finish</b>	<b>2</b> = Nickel <b>5</b> = Gold
<b>AlphaLink® Hardware Option</b>	<b>T</b> = Threaded thru hole <b>Omit</b> for thru hole
<b>Assembly Length (L)</b>	<b>3</b> = 3.00 ± .05 inches <b>6</b> = 6.00 ± .05 inches <b>12</b> = 12.00 ± .05 inches
<b>Optional Shielding</b>	<b>S</b> = With shielding <b>Omit</b> for none

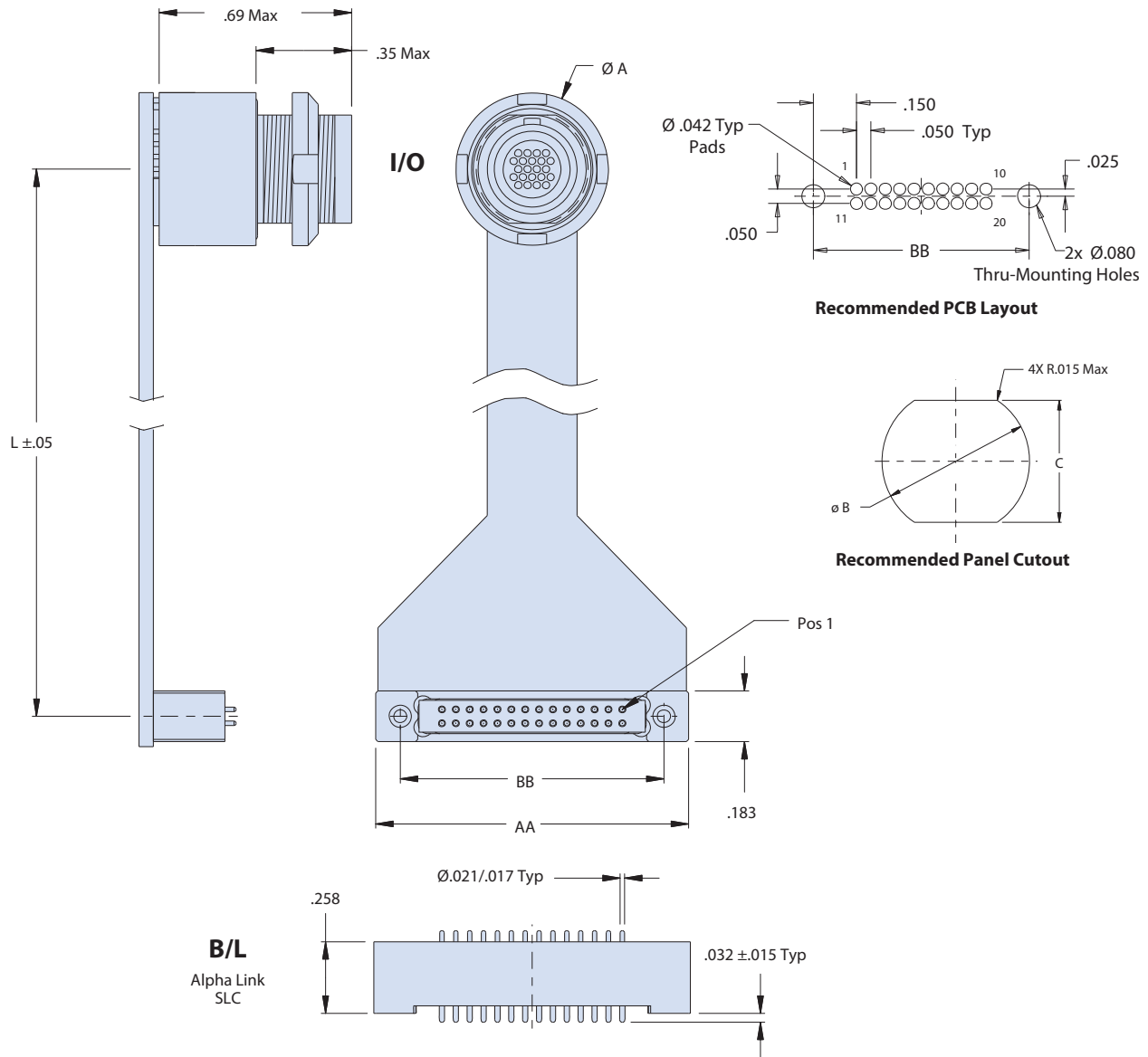
SUPERFLY TO ALPHALINK CONTACT ARRANGEMENTS			
<p><b>B7N</b></p> <p>8 Contacts</p>	<p><b>C10N</b></p> <p>10 Contacts</p>	<p><b>E19N</b></p> <p>19 Contacts</p>	
<p><b>F22N</b></p> <p>22 Contacts</p>	<p><b>G31N</b></p> <p>31 Contacts</p>	<p><b>H37N</b></p> <p>37 Contacts</p>	<p><b>J44N</b></p> <p>44 Contacts</p>

# TURNKEY Flex Jumper Assemblies



## 880-034 SuperFly quick-disconnect rear-panel-mount receptacle connector to AlphaLink® SL flex jumper

### CONNECTOR DIMENSIONS



#### NANOMINIATURE I/O CONNECTOR

#### ALPHALINK SL BOARD CONNECTOR

Arrangement	ØA	ØB	C Flats	No. of Contacts	AA	BB
B7N	.392 (10.0)	.283 (7.2)	.241 (6.1)	8	.627 (15.9)	.450 (11.4)
C10N	.412 (10.5)	.305 (7.7)	.261 (6.6)	10	.677 (17.2)	.500 (12.7)
E19N	.451 (11.5)	.344 (8.7)	.300 (7.6)	20	.927 (23.5)	.750 (19.1)
F22N	.471 (12.0)	.364 (9.2)	.320 (8.1)	28	1.127 (28.6)	.950 (24.1)
G31N	.490 (12.4)	.383 (9.7)	.340 (8.6)	32	1.227 (31.2)	1.050 (26.7)
H37N	.530 (13.5)	.349 (8.9)	.379 (9.6)	40	1.427 (36.2)	1.250 (31.8)
J44N	.569 (14.5)	.459 (11.7)	.418 (10.6)			

## 881-021 SuperFly threaded rear-panel-mount receptacle connector to AlphaLink® SL flex jumper

HOW TO ORDER	
<b>Sample Part Number</b>	<b>880-021R A -F22N -M -2 T -6 S</b>
<b>Basic Part Number</b>	Series 88 SuperFly Threaded I/O receptacle to Series 171 AlphaLink® SL
<b>I/O Insert Configuration</b>	<b>A</b> = Unshrouded Nano socket contacts <b>B</b> = Shrouded Nano TwistPin contacts
<b>I/O Shell Size / Contact Arrangement</b>	<b>B7N, C10N, E19N, F22N, G31N, H37N, J44N</b>
<b>I/O Shell Material/Finish</b>	<b>M</b> = Aluminum / Electroless Nickel <b>ZR</b> = Aluminum / Black Zinc Nickel over Electroless Nickel <b>MT</b> = Aluminum / Nickel-PTFE <b>NF</b> = Aluminum / Olive Drab over Cadmium <b>ZC</b> = Stainless Steel / Zinc Cobalt (Black) <b>ZK</b> = Stainless Steel / Passivated <b>ZMT</b> = Stainless Steel / Nickel Fluoropolymer
<b>AlphaLink® Finish</b>	<b>2</b> = Nickel <b>5</b> = Gold
<b>AlphaLink® Hardware Option</b>	<b>T</b> = Threaded thru hole <b>Omit</b> for thru hole
<b>Assembly Length (L)</b>	<b>3</b> = 3.00 ± .05 inches <b>6</b> = 6.00 ± .05 inches <b>12</b> = 12.00 ± .05 inches
<b>Optional Shielding</b>	<b>S</b> = With shielding <b>Omit</b> for none

### SUPERFLY FLEX JUMPERS

Glenair Series 89 SuperFly™ nano miniature connectors available in 7 contact arrangements, terminated with rugged polyimide-based flex to AlphaLink® board level connectors.

### FLEX PERFORMANCE

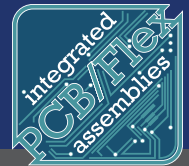
- EMI shielding film will be used when shielding option is chosen
- Bend radius is 6 to 10 X flex thickness.
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Workmanship shall be IAW IPC-6013, Class 2.

### NOTES

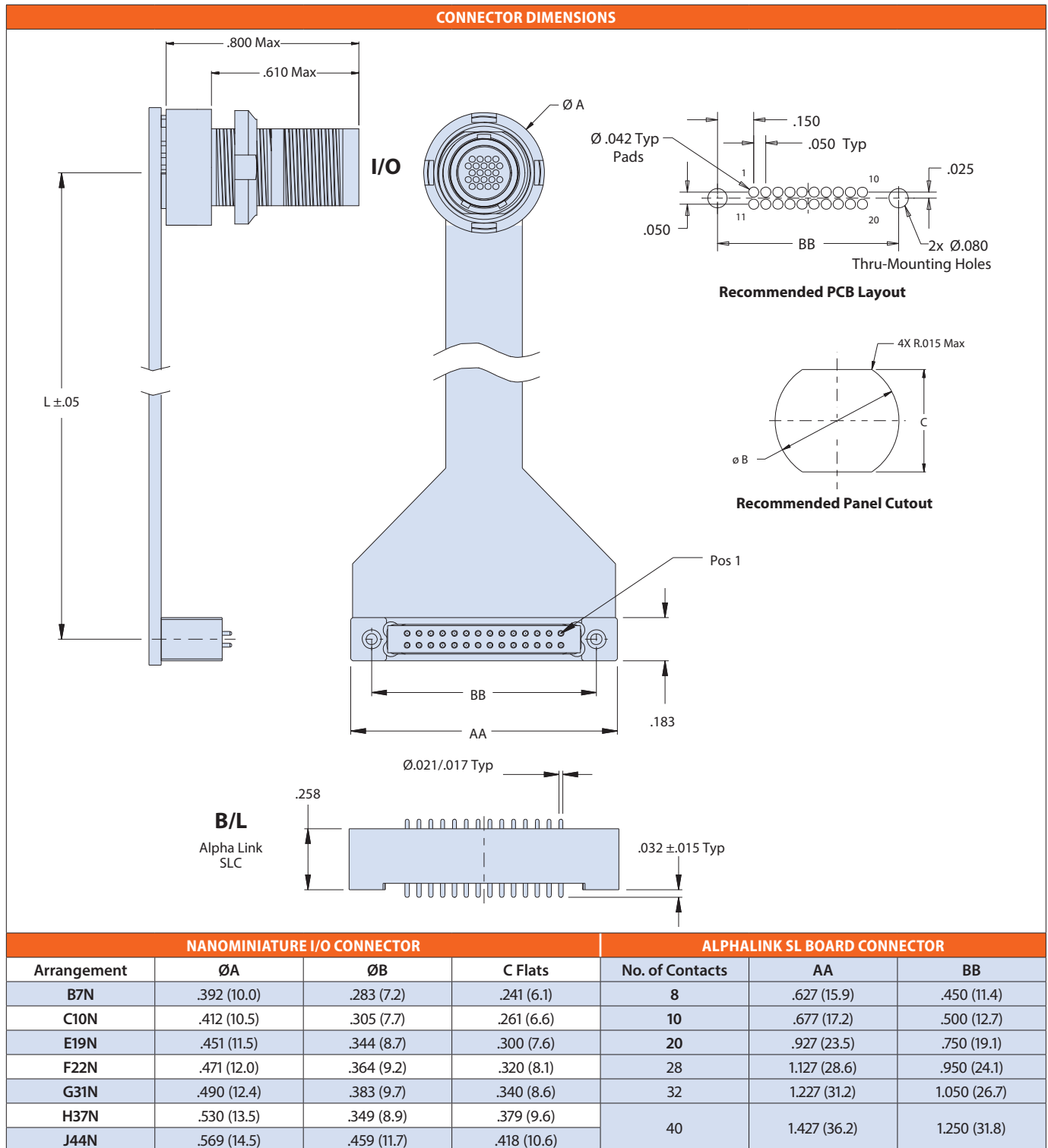
- I/O Series 88 threaded receptacle
- Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). For alternative wire schedules, please consult factory.
- Unused Cavities in connectors to be populated with contacts.
- B/L AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

SUPERFLY TO ALPHALINK CONTACT ARRANGEMENTS			
<p><b>B7N</b></p> <p>8 Contacts</p>	<p><b>C10N</b></p> <p>10 Contacts</p>	<p><b>E19N</b></p> <p>19 Contacts</p>	
<p><b>F22N</b></p> <p>22 Contacts</p>	<p><b>G31N</b></p> <p>31 Contacts</p>	<p><b>H37N</b></p> <p>37 Contacts</p>	<p><b>J44N</b></p> <p>44 Contacts</p>

# TURNKEY Flex Jumper Assemblies



## 881-021 SuperFly threaded rear-panel-mount receptacle connector to AlphaLink® SL flex jumper



## 801-110 Mighty Mouse rear-panel-mount environmental double-start ACME thread connector to AlphaLink® SL flex jumper



### MIGHTY MOUSE FLEX JUMPERS

Series 801 double-start ACME threaded micro miniature connectors available in 8 contact arrangements, terminated with rugged polyimide-based flex to AlphaLink® board level connectors.

### FLEX PERFORMANCE

- EMI shielding film will be used when shielding option is chosen
- Bend radius is 6 to 10 X flex thickness.
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Workmanship shall be IAW IPC-6013, Class 2.

### NOTES

- I/O Series 801 threaded receptacle, square-flange or jam nut mount
- Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). For alternative wire schedules, please consult factory.
- Unused Cavities in connectors to be populated with contacts.
- B/L AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

HOW TO ORDER	
<b>Sample Part Number</b>	<b>801-110 -07 NF 10-26 P A -2 T -6 S</b>
<b>Basic Part Number</b>	Sr. 801 Mighty Mouse I/O receptacle to Series 171 AlphaLink® SL
<b>I/O Connector Style</b>	<b>02</b> = Square flange receptacle <b>07</b> = Jam nut receptacle
<b>I/O Shell Material/Finish</b>	<b>C</b> = Aluminum / Black Anodize <b>M</b> = Aluminum / Electroless Nickel <b>NF</b> = Aluminum / Olive Drab over Cadmium <b>ZN</b> = Aluminum / Zinc Nickel Olive Drab <b>ZNU</b> = Aluminum / Zinc Nickel Black <b>MT</b> = Aluminum / Nickel PTFE <b>Z1</b> = Stainless Steel / Passivated
<b>I/O Insert Arrangement</b>	<b>6-4, 6-7, 7-10, 8-13, 9-19, 10-26, 11-31, 13-37</b>
<b>I/O Contact Gender</b>	<b>P</b> = Pin <b>S</b> = Socket
<b>I/O Alternate Polarization</b>	<b>A, B, C, D, E, F</b> (See Table VII)
<b>AlphaLink® Finish</b>	<b>2</b> = Nickel <b>5</b> = Gold
<b>AlphaLink® Hardware Option</b>	<b>T</b> = Threaded thru hole <b>Omit</b> for thru hole
<b>Assembly Length (L)</b>	<b>3</b> = 3.00 ± .05 inches <b>6</b> = 6.00 ± .05 inches <b>12</b> = 12.00 ± .05 inches
<b>Optional Shielding</b>	<b>S</b> = With shielding <b>Omit</b> for none

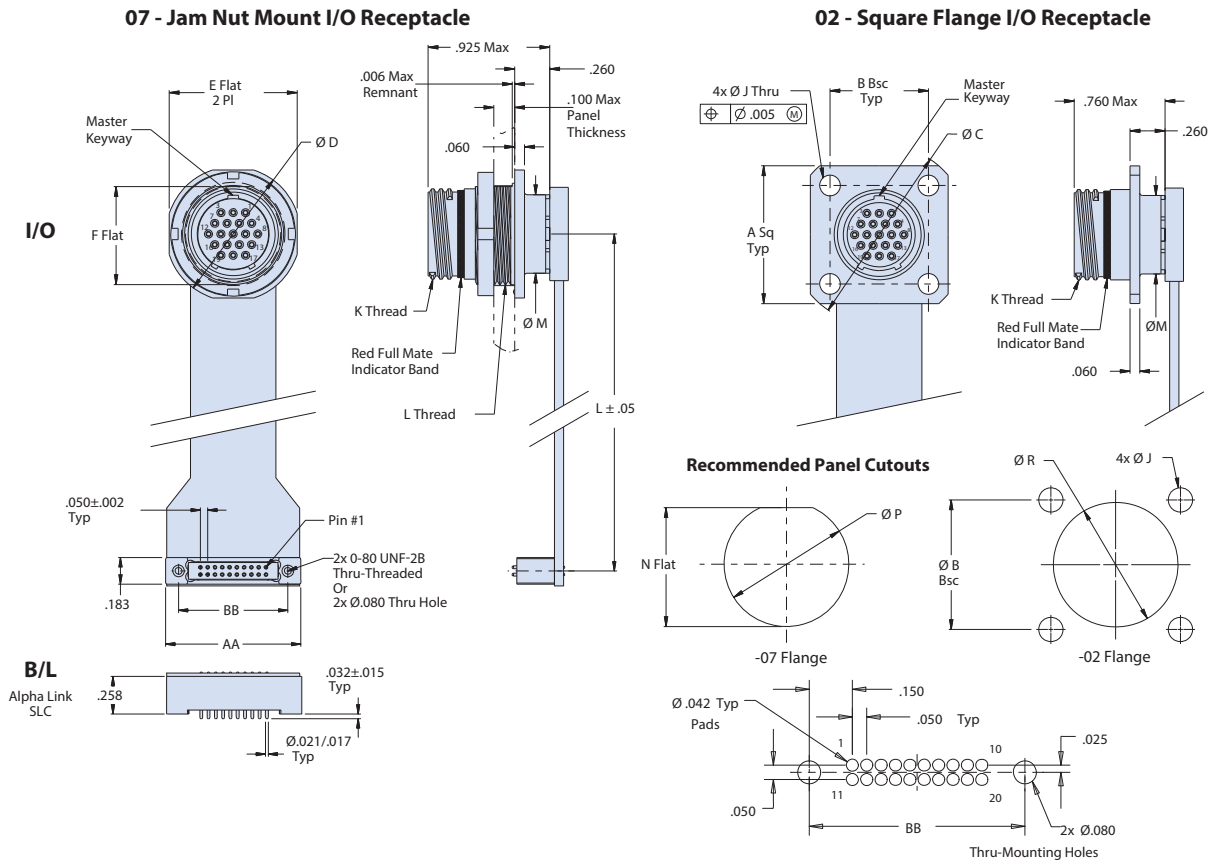
MIGHTY MOUSE TO ALPHALINK CONTACT ARRANGEMENTS			
<p><b>6-4</b></p> <p>4 Contacts</p>	<p><b>6-7</b></p> <p>8 Contacts</p>	<p><b>7-10</b></p> <p>10 Contacts</p>	<p><b>8-13</b></p> <p>16 Contacts</p>
<p><b>9-19</b></p> <p>20 Contacts</p>	<p><b>10-26</b></p> <p>28 Contacts</p>	<p><b>11-31</b></p> <p>32 Contacts</p>	<p><b>13-37</b></p> <p>40 Contacts</p>

Position	ALTERNATE KEY/KEYWAY POSITION	
	A°	B°
A	150°	210°
B	75°	210°
C	95°	230°
D	140°	275°
E	75°	275°
F	95°	210°



## 801-110 Mighty Mouse rear-panel-mount environmental double-start ACME thread connector to AlphaLink® SL flex jumper

### CONNECTOR DIMENSIONS



### Recommended PCB Layout

07 MIGHTY MOUSE JAM NUT I/O CONNECTOR									ALPHALINK SL B/L CONNECTOR		
Arrangement	ØD	E Flat	F Flat	K Thread	L Thread	Ø M	N Flat	Ø P	No. of Contacts	AA	BB
6	.635 (16.1)	.595 (15.1)	.410 (10.4)	.3750-.05P-.1L-2A	.4375-28 UNEF-2A	.330 (8.4)	0.418 (10.6) 0.414 (10.5)	.448 (11.4)	4	.527 (13.4)	.350 (8.9)
7	.755 (19.2)	.723 (18.4)	.536 (13.6)	.4375-.05P-.1L-2A	.5625-32 UN-2A	.432 (11.0)	0.544 (13.8) 0.540 (13.7)	.573 (14.6)	8	.627 (15.9)	.450 (11.4)
8	.755 (19.2)	.723 (18.4)	.536 (13.6)	.5000-.05P-.1L-2A	.5625-32 UN-2A	.493 (12.5)	0.544 (13.8) 0.540 (13.7)	.573 (14.6)	10	.677 (17.2)	.500 (12.7)
9	.830 (21.1)	.790 (20.1)	.596 (15.1)	.5625-.05P-.1L-2A	.6250-28 UN-2A	.551 (14.0)	0.604 (15.3) 0.600 (15.2)	.635 (16.1)	20	.927 (23.5)	.750 (19.1)
10	.890 (22.6)	.855 (21.7)	.658 (16.7)	.6250-.05P-.1L-2A	.6875-28 UN-2A	.620 (15.7)	0.668 (17.0) 0.664 (16.9)	.698 (17.7)	28	1.127 (28.6)	.950 (24.1)
11	.960 (24.4)	.925 (23.5)	.718 (18.2)	.6875-.05P-.1L-2A	.7500-28 UN-2A	.662 (16.8)	0.728 (18.5) 0.724 (18.4)	.760 (19.3)	32	1.227 (31.2)	1.050 (26.7)
13	1.078 (27.4)	1.044 (26.5)	.845 (21.5)	.8125-.1P-.2L-2A	.8750-28 UN-2A	.703 (17.9)	0.853 (21.7) 0.849 (21.6)	.885 (22.5)	40	1.427 (36.2)	1.250 (31.8)
02 MIGHTY MOUSE SQUARE FLANGE I/O CONNECTOR									ALPHALINK SL B/L CONNECTOR		
Arrangement	A Sq	B Bsc	ØC	J Holes	K Thread	Ø M	Ø R	No. of Contacts	AA	BB	
6	.590 (15.0)	.423 (10.7)	.750 (19.1)	.096 (2.4) .091 (2.3)	.3750-.05P-.1L-2A	.330 (8.4)	.390 (9.9)	4	.527 (13.4)	.350 (8.9)	
7	.650 (16.5)	.483 (12.3)	.850 (21.6)		.4375-.05P-.1L-2A	.432 (11.0)	.450 (11.4)	8	.627 (15.9)	.450 (11.4)	
8	.712 (18.1)	.545 (13.8)	.938 (23.8)	.130 (3.3) .126 (3.2)	.5000-.05P-.1L-2A	.493 (12.5)	.510 (13.0)	10	.677 (17.2)	.500 (12.7)	
9	.850 (21.6)	.607 (15.4)	1.125 (28.6)		.5625-.05P-.1L-2A	.551 (14.0)	.575 (14.6)	20	.927 (23.5)	.750 (19.1)	
10	.890 (22.6)	.670 (17.0)	1.188 (30.2)	.130 (3.3) .126 (3.2)	.6250-.05P-.1L-2A	.620 (15.7)	.640 (16.3)	28	1.127 (28.6)	.950 (24.1)	
11	.935 (23.7)	.715 (18.2)	1.250 (31.8)		.6875-.05P-.1L-2A	.662 (16.8)	.700 (17.8)	32	1.227 (31.2)	1.050 (26.7)	
13	1.030 (26.2)	.812 (20.6)	1.375 (34.9)	.130 (3.3) .126 (3.2)	.8125-.1P-.2L-2A	.703 (17.9)	.825 (21.0)	40	1.427 (36.2)	1.250 (31.8)	

## 804-110 Mighty Mouse rear-panel-mount environmental push-pull connector to AlphaLink® SL flex jumper

### MIGHTY MOUSE FLEX JUMPERS

- Series 804 push-pull micro miniature connectors available in 8 contact arrangements, terminated with rugged polyimide-based flex to AlphaLink® board level connectors.

### FLEX PERFORMANCE

- EMI shielding film will be used when shielding option is chosen
- Bend radius is 6 to 10 X flex thickness.
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Workmanship shall be IAW IPC-6013, Class 2.

### NOTES

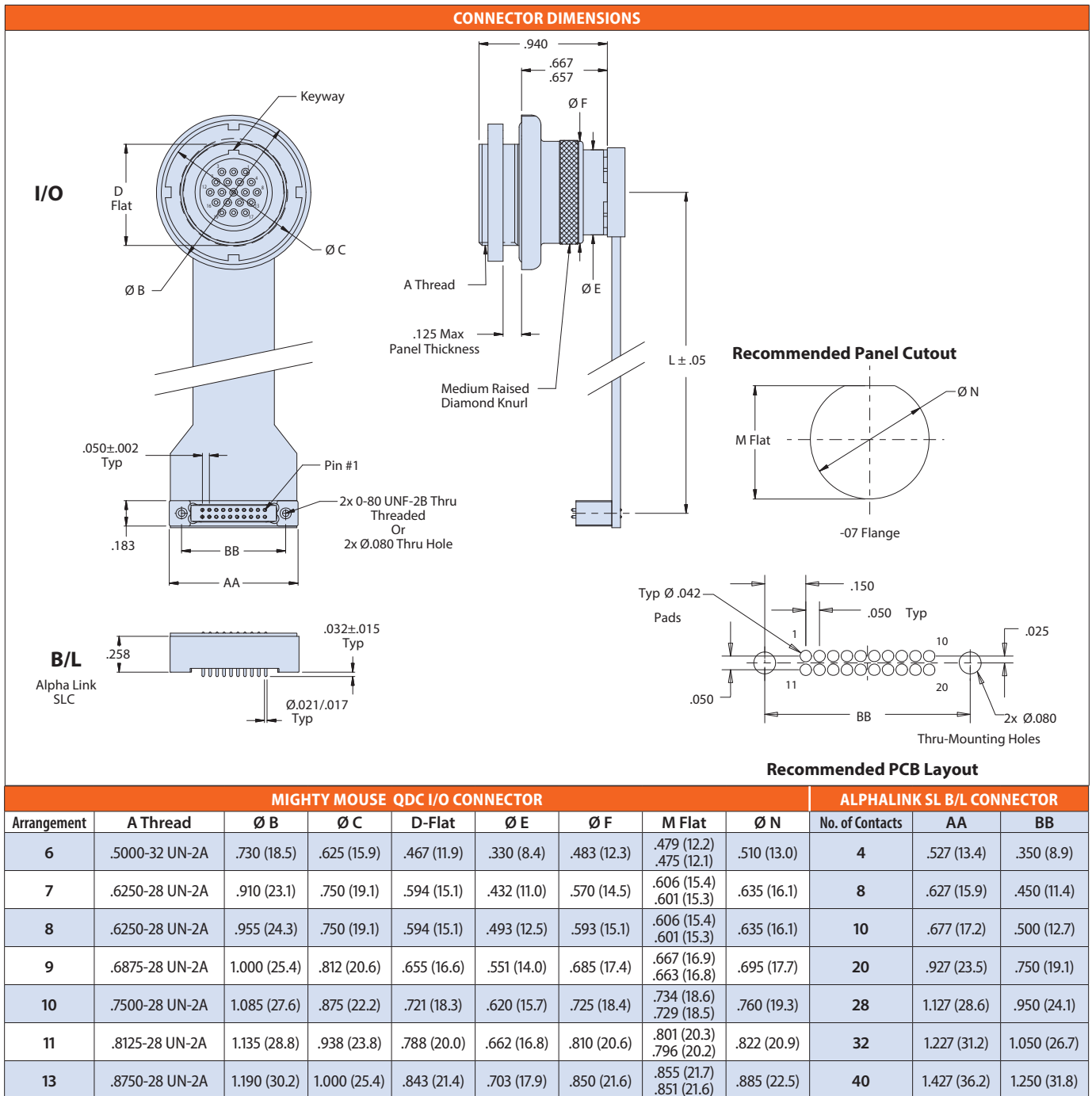
- I/O Series 804 push-pull QDC receptacle, square-flange or jam-nut mount
- Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). For alternative wire schedules, please consult factory.
- Unused Cavities in connectors to be populated with contacts.
- B/L AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

HOW TO ORDER	
<b>Sample Part Number</b>	<b>804-110 -07 NF 10-26 P A -2 T -6 S</b>
<b>Basic Part Number</b>	Sr. 804 Mighty Mouse I/O receptacle to Series 171 AlphaLink® SL
<b>I/O Connector Style</b>	<b>02</b> = Square flange receptacle <b>07</b> = Jam nut receptacle
<b>I/O Shell Material/Finish</b>	<b>C</b> = Aluminum / Black Anodize <b>M</b> = Aluminum / Electroless Nickel <b>NF</b> = Aluminum / Olive Drab over Cadmium <b>ZN</b> = Aluminum / Zinc Nickel Olive Drab <b>ZNU</b> = Aluminum / Zinc Nickel Black <b>MT</b> = Aluminum / Nickel PTFE <b>Z1</b> = Stainless Steel / Passivated
<b>I/O Insert Arrangement</b>	<b>6-4, 6-7, 7-10, 8-13, 9-19, 10-26, 11-31, 13-37</b>
<b>I/O Contact Gender</b>	<b>P</b> = Pin <b>S</b> = Socket
<b>I/O Alternate Polarization</b>	<b>A, B, C, D, E, F</b> (See Table VII)
<b>AlphaLink® Finish</b>	<b>2</b> = Nickel <b>5</b> = Gold
<b>AlphaLink® Hardware Option</b>	<b>T</b> = Threaded thru hole <b>Omit</b> for thru hole
<b>Assembly Length (L)</b>	<b>3</b> = 3.00 ± .05 inches <b>6</b> = 6.00 ± .05 inches <b>12</b> = 12.00 ± .05 inches
<b>Optional Shielding</b>	<b>S</b> = With shielding <b>Omit</b> for none

MIGHTY MOUSE TO ALPHALINK CONTACT ARRANGEMENTS			
<p><b>6-4</b> 4 Contacts</p>	<p><b>6-7</b> 8 Contacts</p>	<p><b>7-10</b> 10 Contacts</p>	<p><b>8-13</b> 16 Contacts</p>
<p><b>9-19</b> 20 Contacts</p>	<p><b>10-26</b> 28 Contacts</p>	<p><b>11-31</b> 32 Contacts</p>	<p><b>13-37</b> 40 Contacts</p>

Position	ALTERNATE KEY/KEYWAY POSITION	
	A°	B°
A	150°	210°
B	75°	210°
C	95°	230°
D	140°	275°
E	75°	275°
F	95°	210°

## 804-110 Mighty Mouse rear-panel-mount environmental push-pull connector to AlphaLink® SL flex jumper



## 286-077P HiPer-D pin connector to AlphaLink® SL flex jumper



### HIPER-D FLEX JUMPERS

High-reliability HiPer-D MIL-DTL-24308 intermateable/ intermountable rectangular connectors in 6 contact arrangements, terminated with rugged polyimide-based flex to high-performance AlphaLink® SL board level connectors.

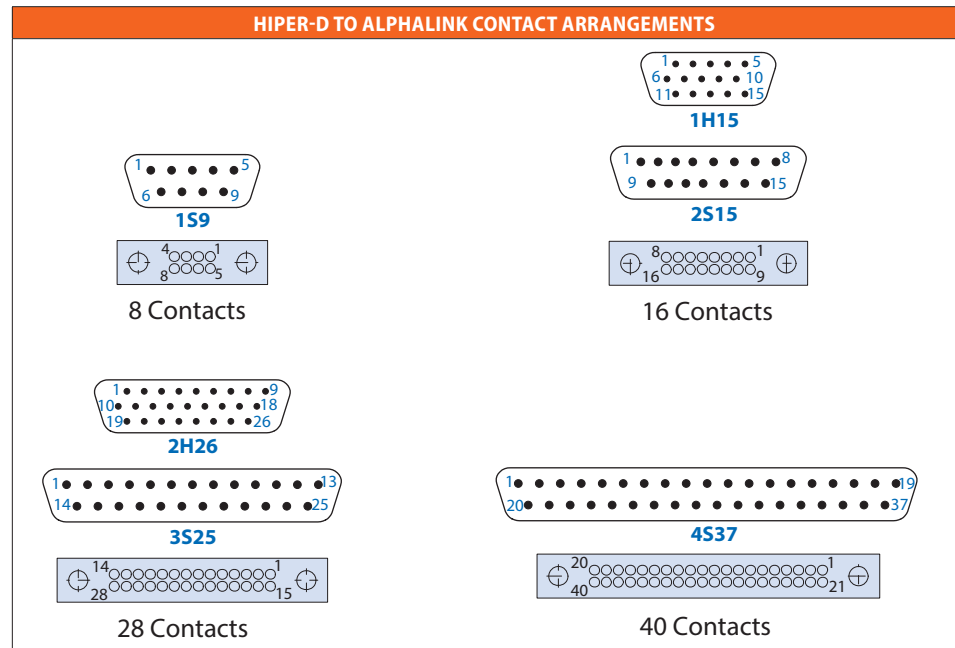
### FLEX PERFORMANCE

- EMI shielding film will be used when shielding option is chosen
- Bend radius is 6 to 10 X flex thickness.
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Workmanship shall be IAW IPC-6013, Class 2.

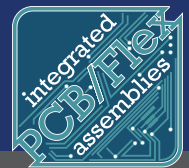
### NOTES

- I/O Series 28 HiPer-D right-angle pin-contact connector, rear panel mount with O-ring environmental seal (280-024)
- Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). For alternative wire schedules, please consult factory.
- Unused Cavities in connectors to be populated with contacts.
- B/L AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

HOW TO ORDER	
<b>Sample Part Number</b>	286-077P -3525 ME G N -2 T -6 S
<b>Basic Part Number</b>	HiPer-D pin connector to Series 171 AlphaLink® SL
<b>I/O Insert Arrangement</b>	1S9, 1H15, 2S15, 2H26, 3S25, 4S37
<b>I/O Shell Material/Finish</b>	ME = Aluminum / Electroless Nickel Z1 = Stainless Steel / Passivated ZM = Stainless Steel / Electroless Nickel JF = Aluminum / Yellow Chromate over Cadmium
<b>I/O Grounding Option</b>	G = EMI Grounding N = None
<b>I/O Hardware Option</b>	N = None (Tapped Hole) P = Female Jackpost G = Guide Pin B = Guide Bushing
<b>AlphaLink® Finish</b>	2 = Nickel 5 = Gold
<b>AlphaLink® Hardware Option</b>	T = Threaded thru hole Omit for thru hole
<b>Assembly Length (L)</b>	3 = 3.00 ± .05 inches 6 = 6.00 ± .05 inches 12 = 12.00 ± .05 inches
<b>Optional Shielding</b>	S = With shielding Omit for none

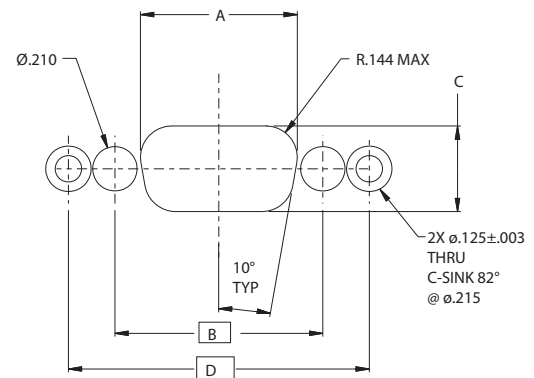
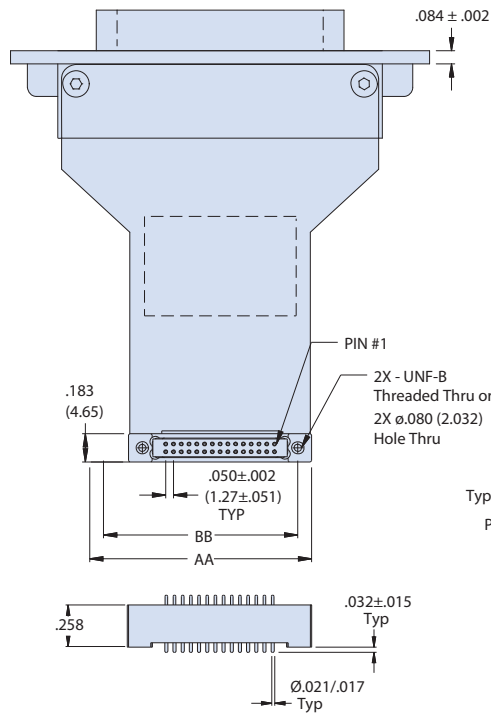
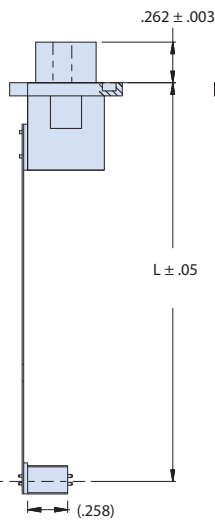
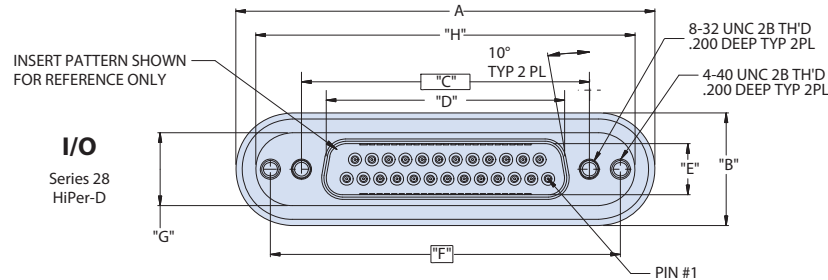


# TURNKEY Flex Jumper Assemblies

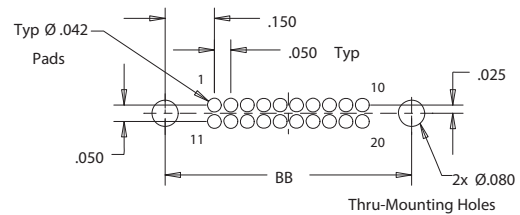


## 286-077P HiPer-D pin connector to AlphaLink® SL flex jumper

### CONNECTOR DIMENSIONS



**Recommended Panel Cutout  
as viewed from front face of panel**



**Recommended PCB Layout**

**B/L**  
Alpha Link  
SLC

#### HIPER-D I/O CONNECTOR

#### ALPHALINK SL BOARD CONNECTOR

Shell Size	Insert Pattern	A ± .015	B ± .015	C Basic	D ± .005	E ± .005	F Basic	G ± .015	H ± .015	Size	AA	BB
1	S9	1.865	0.725	0.984	0.666	0.329	1.424	0.469	1.609	8	.627 (15.9)	.450 (11.4)
	H15	(47.4)	(18.4)	(25.0)	(16.9)	(8.4)	(36.2)	(11.9)	(40.9)			
2	S15	2.200	0.725	1.312	0.994	0.329	1.752	0.469	1.944	16	.827 (21.0)	.650 (16.5)
	H26	(55.9)	(18.4)	(33.3)	(25.2)	(8.4)	(44.5)	(11.9)	(49.4)			
3	S25	2.736	0.725	1.852	1.534	0.329	2.292	0.469	2.480	28	1.127 (28.6)	.950 (24.1)
4	S37	3.385	0.725	2.500	2.182	0.329	2.940	0.469	3.129	40	1.427 (36.2)	1.250 (31.8)

## 286-078S HiPer-D socket connector to AlphaLink® SL flex jumper



### HIPER-D FLEX JUMPERS

High-reliability HiPer-D MIL-DTL-24308 intermateable/ intermountable rectangular connectors in 6 contact arrangements, terminated with rugged polyimide-based flex to high-performance AlphaLink® SL board level connectors.

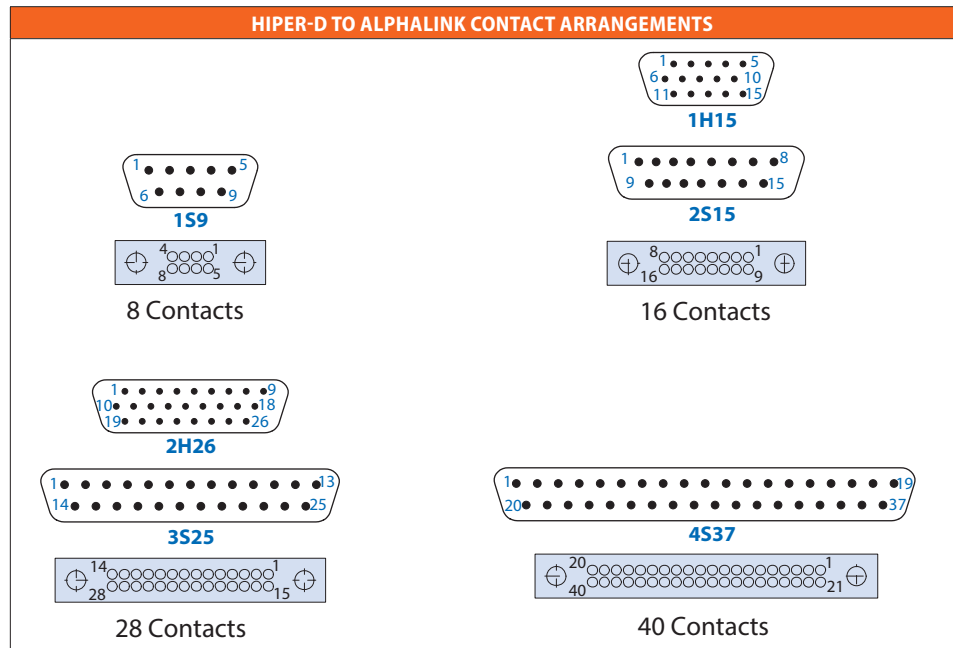
### FLEX PERFORMANCE

- EMI shielding film will be used when shielding option is chosen
- Bend radius is 6 to 10 X flex thickness.
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Workmanship shall be IAW IPC-6013, Class 2.

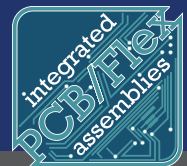
### NOTES

- I/O Series 28 HiPer-D right-angle socket-contact connector, rear panel mount with O-ring environmental seal (280-025)
- Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). For alternative wire schedules, please consult factory.
- Unused Cavities in connectors to be populated with contacts.
- B/L AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

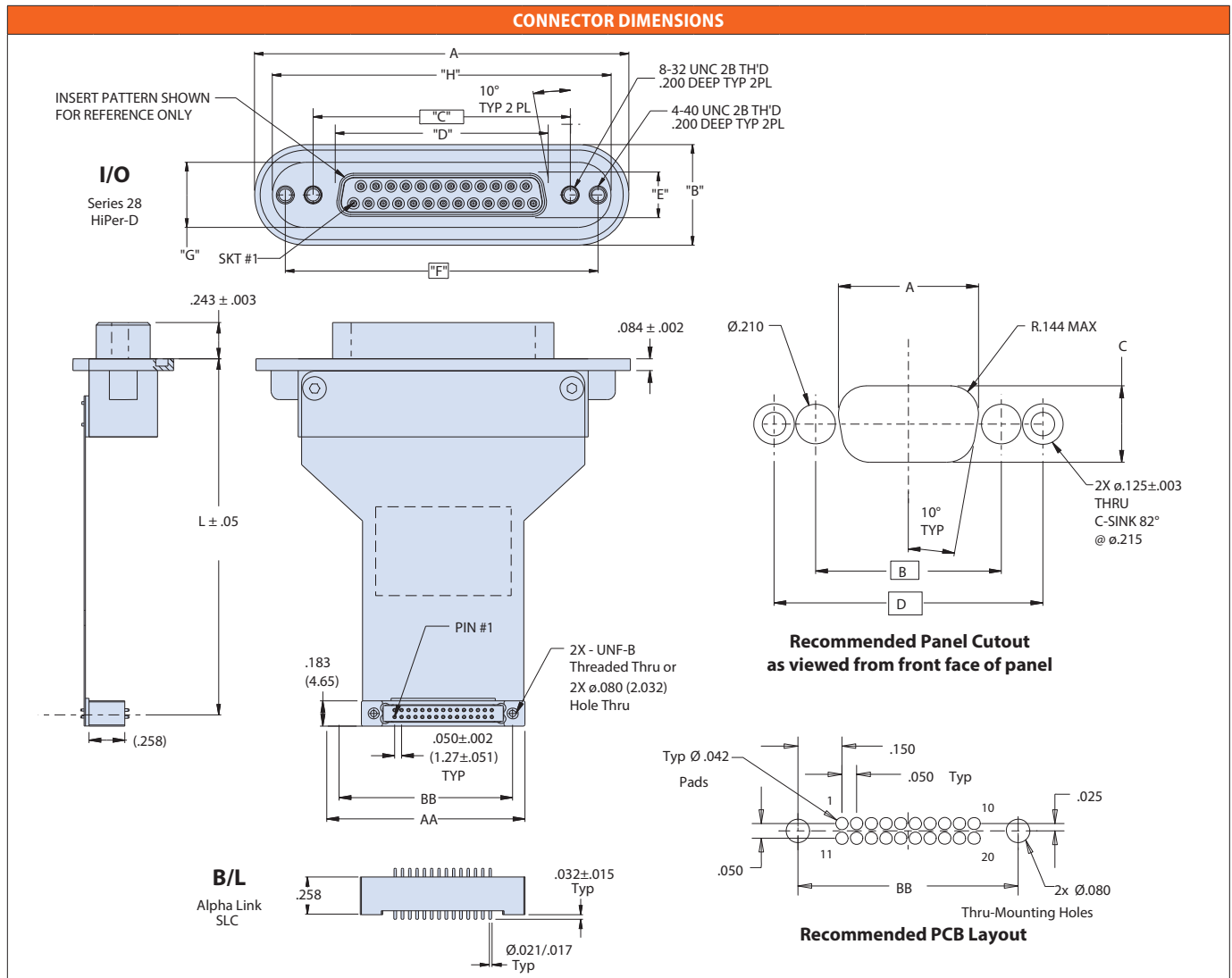
HOW TO ORDER	
<b>Sample Part Number</b>	286-078S -3525 ME N -2 T -6 S
<b>Basic Part Number</b>	HiPer-D pin connector to Series 171 AlphaLink® SL
<b>I/O Insert Arrangement</b>	1S9, 1H15, 2S15, 2H26, 3S25, 4S37
<b>I/O Shell Material/ Finish</b>	ME = Aluminum / Electroless Nickel Z1 = Stainless Steel / Passivated ZM = Stainless Steel / Electroless Nickel JF = Aluminum / Yellow Chromate over Cadmium
<b>I/O Hardware Option</b>	N = None (Tapped Hole) P = Female Jackpost G = Guide Pin B = Guide Bushing
<b>AlphaLink® Finish</b>	2 = Nickel 5 = Gold
<b>AlphaLink® Hardware Option</b>	T = Threaded thru hole Omit for thru hole
<b>Assembly Length (L)</b>	3 = 3.00 ± .05 inches 6 = 6.00 ± .05 inches 12 = 12.00 ± .05 inches
<b>Optional Shielding</b>	S = With shielding Omit for none



# TURNKEY Flex Jumper Assemblies



## 286-078S HiPer-D socket connector to AlphaLink® SL flex jumper



HIPER-D I/O CONNECTOR										ALPHALINK SL BOARD CONNECTOR		
Shell Size	Insert Pattern	A ± .015	B ± .015	C Basic	D ± .005	E ± .005	F Basic	G ± .015	H ± .015	Size	AA	BB
1	S9	1.865 (47.4)	0.725 (18.4)	0.984 (25.0)	0.643 (16.3)	0.311 (7.9)	1.424 (36.2)	0.469 (11.9)	1.609 (40.9)	8	.627 (15.9)	.450 (11.4)
	H15											
2	S15	2.200 (55.9)	0.725 (18.4)	1.312 (33.3)	0.971 (24.7)	0.311 (7.9)	1.752 (44.5)	0.469 (11.9)	1.944 (49.4)	16	.827 (21.0)	.650 (16.5)
	H26											
3	S25	2.736 (69.5)	0.725 (18.4)	1.852 (47.0)	1.511 (38.4)	0.311 (7.9)	2.292 (58.2)	0.469 (11.9)	2.480 (63.0)	28	1.127 (28.6)	.950 (24.1)
4	S37	3.385 (86.0)	0.725 (18.4)	2.500 (63.5)	2.159 (54.8)	0.311 (7.9)	2.940 (74.7)	0.469 (11.9)	3.129 (79.5)	40	1.427 (36.2)	1.250 (31.8)

## 796-112 Rear panel mount environmental Series 79 Micro-Crimp pin contact receptacle to AlphaLink® SL flex jumper

### SERIES 79 MICRO-CRIMP FLEX JUMPERS

Glenair Series 79 Micro-Crimp advanced-performance rectangular connectors in 7 contact arrangements, terminated with rugged polyimide-based flex to AlphaLink® board level connectors.

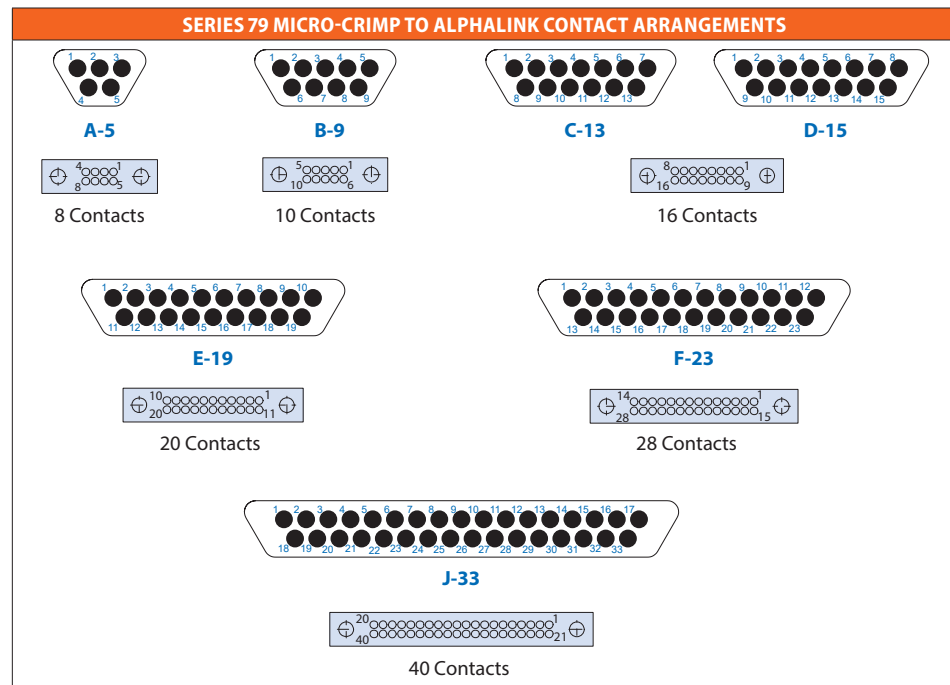
### FLEX PERFORMANCE

- EMI shielding film will be used when shielding option is chosen
- Bend radius is 6 to 10 X flex thickness.
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Workmanship shall be IAW IPC-6013, Class 2.

### NOTES

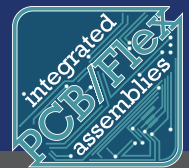
- I/O Series 79 Micro-Crimp receptacle connector, rear panel-mount with O-ring environmental seal
- Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). For alternative wire schedules, please consult factory.
- Unused Cavities in connectors to be populated with contacts.
- B/L AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

HOW TO ORDER	
<b>Sample Part Number</b>	796-112- 9-10 M G -2 T -6 S
<b>Basic Part Number</b>	Rear Panel-Mount Micro-Crimp I/O receptacle to Series 171 AlphaLink® SL
<b>I/O Insert Arrangement</b>	A-5, B-9, C013, D-15, E-19, F-23, J-33
<b>I/O Shell Material/Finish</b>	M = Aluminum / Electroless Nickel MT = Aluminum / Nickel PTFE E = Aluminum / Chem Film Z2 = Aluminum / Gold UC = Aluminum / Zinc Cobalt with Black Chromate J = Aluminum / Yellow Chromate over Cadmium NF = Aluminum / Cad Olive Drab over Electroless Nickel
<b>I/O Hardware Option</b>	P - Jackposts G - Male Guide Pins S - Female Guide Sockets N - No Mating Hardware
<b>AlphaLink® Finish</b>	2 = Nickel 5 = Gold
<b>AlphaLink® Hardware Option</b>	T = Threaded thru hole Omit for thru hole
<b>Assembly Length (L)</b>	3 = 3.00 ± .05 inches 6 = 6.00 ± .05 inches 12 = 12.00 ± .05 inches
<b>Optional Shielding</b>	S = With shielding Omit for none



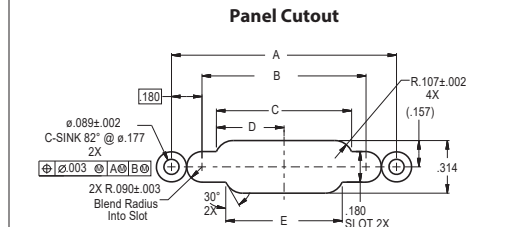
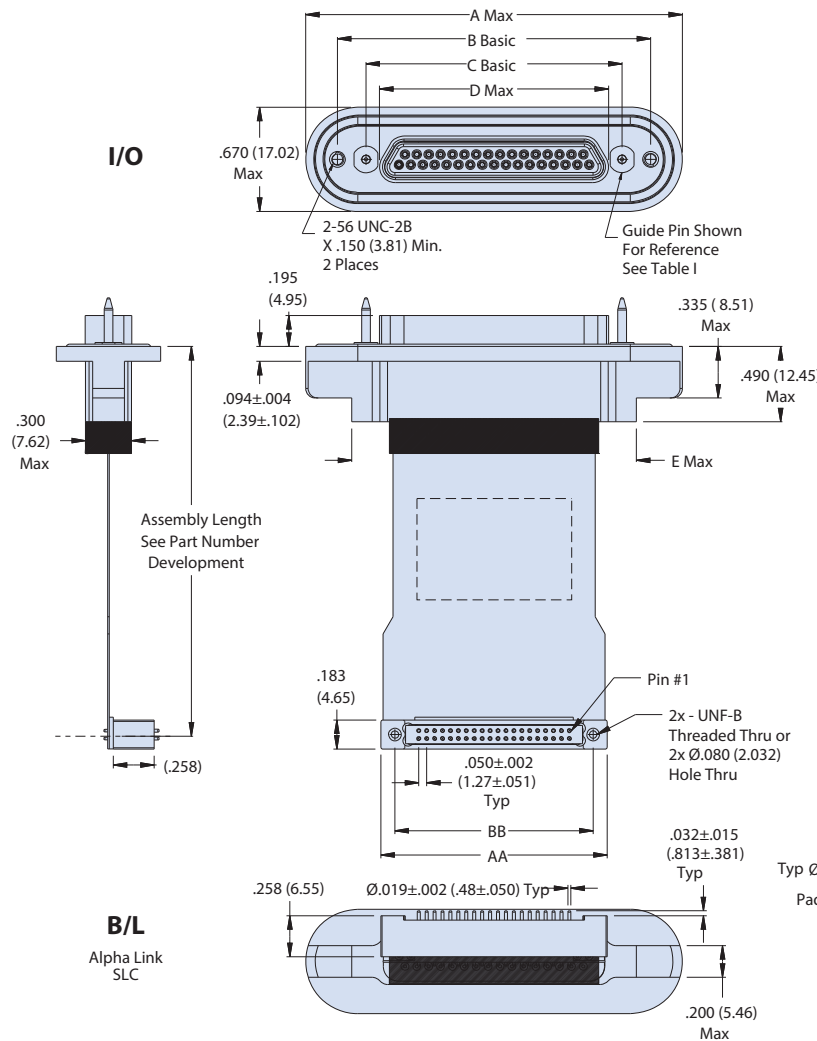


# TURNKEY Flex Jumper Assemblies

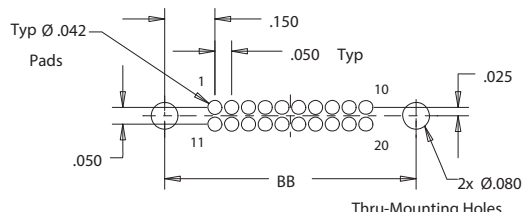


## 796-112 Rear panel mount environmental Series 79 Micro-Crimp pin contact receptacle to AlphaLink® SL flex jumper

### CONNECTOR DIMENSIONS



Shell Size	A		B ±.002		C		D		E	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
A	.925	23.50	.565	14.35	.396	10.06	.198	5.03	.286	7.26
B	1.075	27.31	.715	18.16	.546	13.87	.273	6.93	.436	11.07
C	1.225	31.12	.865	21.97	.696	17.68	.348	8.84	.586	14.88
D	1.325	33.66	.965	24.51	.796	20.22	.398	10.11	.686	17.42
E	1.475	37.47	1.115	28.32	.946	24.03	.473	12.01	.836	21.23
F	1.625	41.28	1.265	32.13	1.096	27.84	.548	13.92	.986	25.04
J	1.975	50.17	1.615	41.02	1.448	36.78	.724	18.39	1.345	34.16



Recommended PCB Layout

### HIPER-D I/O CONNECTOR

### ALPHALINK SL BOARD CONNECTOR

Shell Size	A Max		B Basic		C Basic		D Max		E Max		Size	AA	BB
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm			
A	1.341	34.06	.925	23.50	.565	14.35	.401	10.19	.760	19.30	8	.627 (15.9)	.450 (11.4)
B	1.491	37.87	1.075	27.31	.715	18.16	.551	14.00	.910	21.11	10	.677 (17.2)	.500 (12.7)
C	1.641	41.68	1.225	31.12	.865	21.97	.701	17.81	1.060	26.92	16	.827 (21.0)	.650 (16.5)
D	1.741	44.22	1.325	33.66	.965	24.51	.801	20.35	1.160	29.46			
E	1.891	48.03	1.475	37.47	1.115	28.32	.951	24.16	1.310	33.27	20	.927 (23.5)	.750 (19.1)
F	2.041	51.84	1.625	41.28	1.265	32.13	1.101	27.96	1.460	37.08	28	1.127 (28.6)	.950 (24.1)
J	2.391	60.73	1.975	50.17	1.615	41.02	1.460	37.08	1.810	45.97	40	1.427 (36.2)	1.250 (31.8)

# 796-113 Rear panel mount environmental Micro-Crimp socket contact plug to AlphaLink® SL flex jumper

**SERIES 79 MICRO-CRIMP FLEX JUMPERS**

Glenair Series 79 Micro-Crimp advanced-performance rectangular connectors in 7 contact arrangements, terminated with rugged polyimide-based flex to AlphaLink® board level connectors.

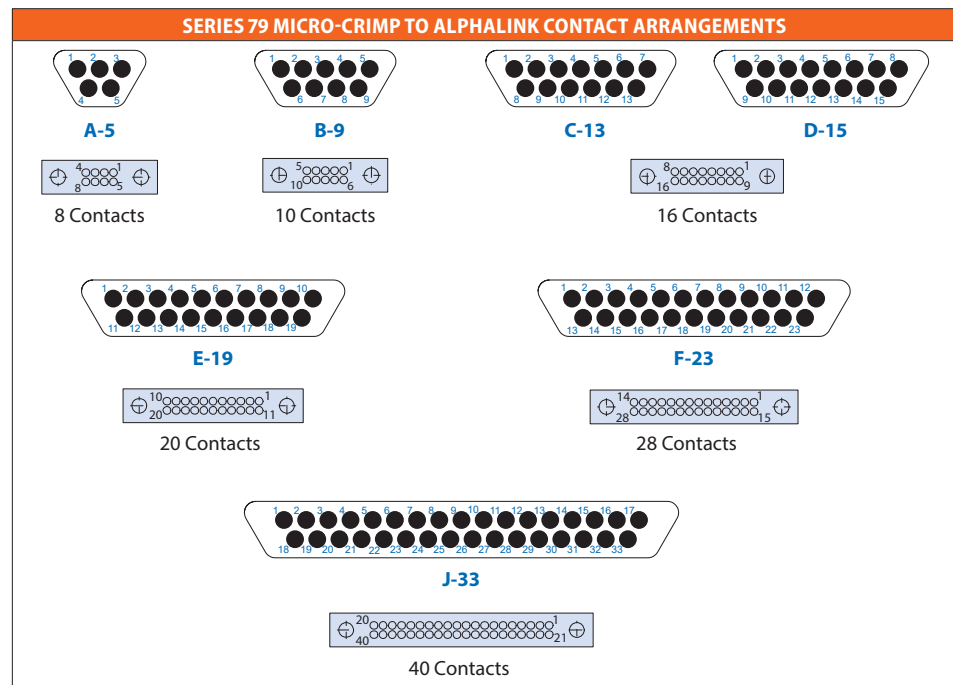
**FLEX PERFORMANCE**

- EMI shielding film will be used when shielding option is chosen
- Bend radius is 6 to 10 X flex thickness.
- Typical flex will be .01 ± .005 thick, rugged, potted, polyimide-based flex.
- Workmanship shall be IAW IPC-6013, Class 2.

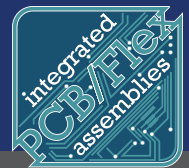
**NOTES**

- I/O Series 79 Micro-Crimp plug connector, socket contacts, rear panel-mount with O-ring environmental seal. Blind mate ±.030 allowable from centerline
- Contacts mapped 1-to-1 from I/O to B/L connector (unused B/L contacts not connected). For alternative wire schedules, please consult factory.
- Unused Cavities in connectors to be populated with contacts.
- B/L AlphaLink® SL interface dimensions IAW Glenair drawing 171-134-02. Interface shown for reference.

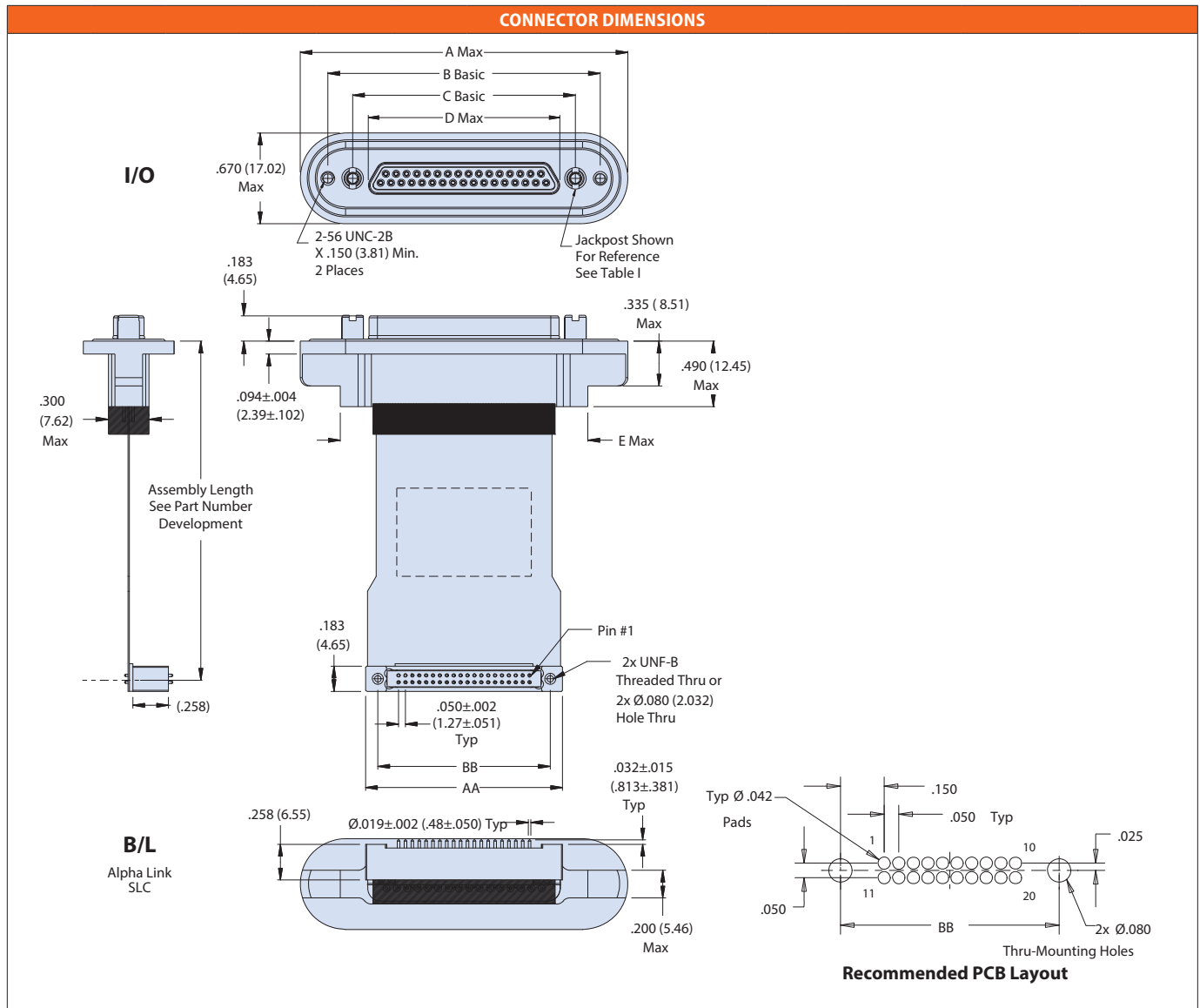
HOW TO ORDER	
<b>Sample Part Number</b>	796-113- 9-10 M E G -2 T -6 S
<b>Basic Part Number</b>	Rear Panel-Mount Micro-Crimp I/O Plug to Series 171 AlphaLink® SL
<b>I/O Insert Arrangement</b>	A-5, B-9, C013, D-15, E-19, F-23, J-33
<b>I/O Shell Material/Finish</b>	M = Aluminum / Electroless Nickel MT = Aluminum / Nickel PTFE E = Aluminum / Chem Film Z2 = Aluminum / Gold UC = Aluminum / Zinc Cobalt with Black Chromate J = Aluminum / Yellow Chromate over Cadmium NF = Aluminum / Cad OD over Electroless Nickel
<b>EMI Spring</b>	E = EMI Spring N = No EMI Spring
<b>I/O Hardware Option</b>	P - Jackposts G - Male Guide Pins S - Female Guide Sockets N - No Mating Hardware
<b>AlphaLink® Finish</b>	2 = Nickel 5 = Gold
<b>AlphaLink® Hardware Option</b>	T = Threaded thru hole Omit for thru hole
<b>Assembly Length (L)</b>	3 = 3.00 ± .05 inches 6 = 6.00 ± .05 inches 12 = 12.00 ± .05 inches
<b>Optional Shielding</b>	S = With shielding Omit for none



# TURNKEY Flex Jumper Assemblies



## 796-113 Rear panel mount environmental Micro-Crimp socket contact plug to AlphaLink® SL flex jumper

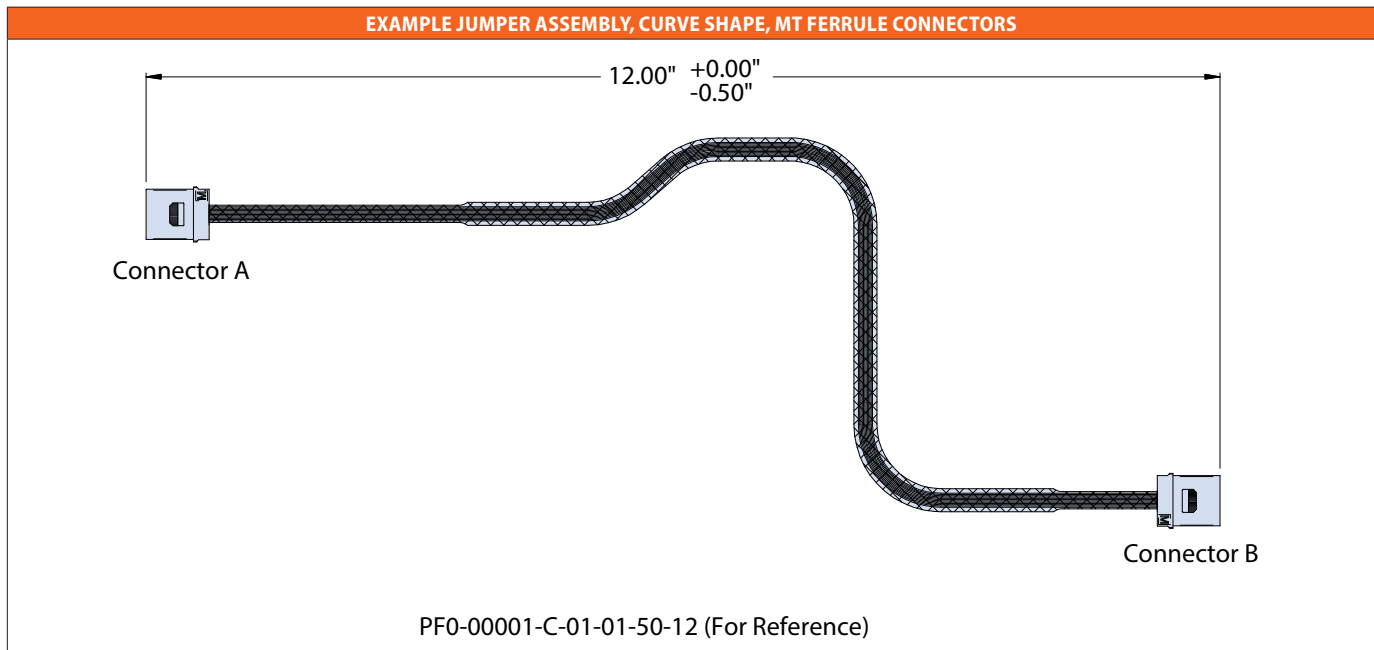


Shell Size	HIPER-D I/O CONNECTOR										ALPHALINK SL BOARD CONNECTOR		
	A Max		B Basic		C Basic		D Max		E Max		Size	AA	BB
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm			
<b>A</b>	1.341	34.06	.925	23.50	.565	14.35	.335	8.51	.760	19.30	8	.627 (15.9)	.450 (11.4)
<b>B</b>	1.491	37.87	1.075	27.31	.715	18.16	.485	12.32	.910	21.11	10	.677 (17.2)	.500 (12.7)
<b>C</b>	1.641	41.68	1.225	31.12	.865	21.97	.635	16.13	1.060	26.92	16	.827 (21.0)	.650 (16.5)
<b>D</b>	1.741	44.22	1.325	33.66	.965	24.51	.735	18.67	1.160	29.46			
<b>E</b>	1.891	48.03	1.475	37.47	1.115	28.32	.885	22.48	1.310	33.27	20	.927 (23.5)	.750 (19.1)
<b>F</b>	2.041	51.84	1.625	41.28	1.265	32.13	1.035	26.29	1.460	37.08	28	1.127 (28.6)	.950 (24.1)
<b>J</b>	2.391	60.73	1.975	50.17	1.615	41.02	1.390	35.31	1.810	45.97	40	1.427 (36.2)	1.250 (31.8)

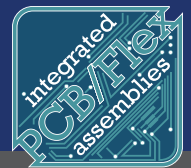
## PF0-0001 Optical flex assembly, straight, loopback, or curve, with I/O connector options



HOW TO ORDER	
<b>Sample Part Number</b>	PF0-0001 -C -01 -01 -09 -12
<b>Basic Part Number</b>	Optical Flex Jumper Assembly
<b>Shape</b>	 L = Loopback    S = Straight    C = Curve Must fit in 12" X 12" area. Consult Glenair for custom design
<b>Connector A</b>	-01 = MT Ferrule                      -04 = MPO -02 = SuperNine MT                -05 = VITA 66.1 -03 = Series 79 MT                   -06 = VITA 66.4
<b>Connector B</b>	-01 = MT Ferrule                      -04 = MPO -02 = SuperNine MT                -05 = VITA 66.1 -03 = Series 79 MT                   -06 = VITA 66.4
<b>Fiber Size</b>	-09 = 9.3/12.5µm Singlemode        -09R = Radhard Singlemode -50 = 50/125µm Multimode            -50R = Radhard Multimode -62 = 62.5/125µm Multimode        -62R = Radhard Multimode
<b>Number of Fibers</b>	-12
Part numbering is for reference purposes only. A unique Glenair part number will be assigned.	

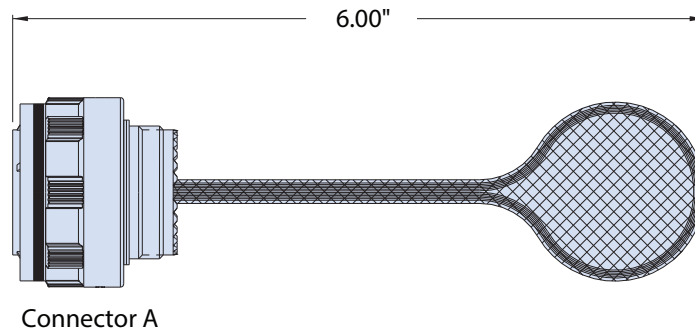


# TURNKEY Optical Flex Jumper Assemblies



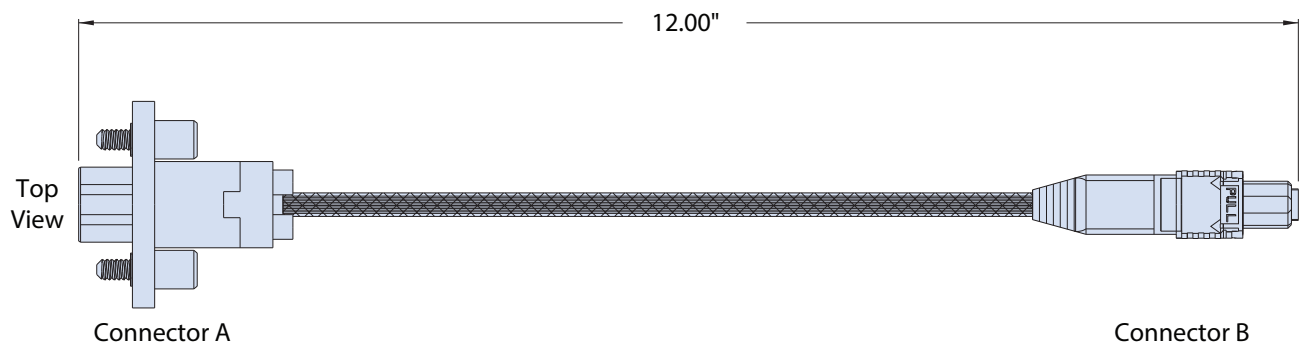
PF0-0001 Optical flex assembly, straight, loopback, or curve, with I/O connector options

EXAMPLE JUMPER ASSEMBLY, LOOPBACK SHAPE, SUPERNINE MT CONNECTOR



PF0-00001-L-02-09-12 (For Reference)

EXAMPLE JUMPER ASSEMBLY, STRAIGHT SHAPE, SERIES 79 MT AND MPO CONNECTORS



PF0-00001-S-03-04-50-12 (For Reference)

TURNKEY

# Flex, Rigid Flex, and Rigid PCB Assemblies



## Production lab

GLENDALE, CALIFORNIA  
IPC 6012/6013 Class I, II, III, types 1-4  
ISO 9001, AS9100 Certified

Glenair Integrated PCB/Flex assembly production facilities are operated in accordance with commercial and military standards. Staff includes 200+ PCB and cable assemblers with J-STD-001 Space certification for special processes and ESD management.



- High-availability catalog components as well as custom design and manufacture
- No minimums
- We never obsolete parts

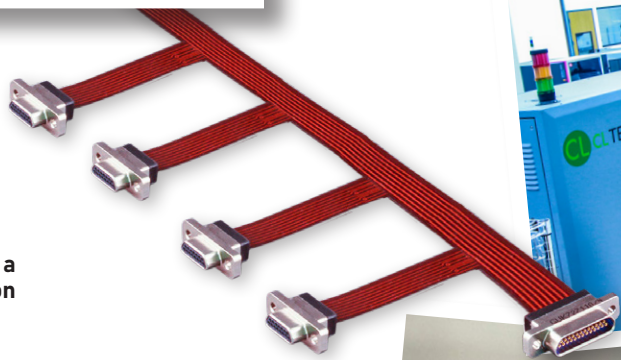


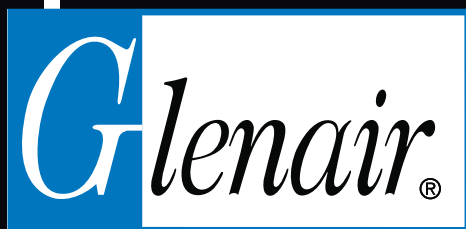
Automated Optical Inspection and Flying Probe Electrical Test





Glenair's PCB/Flex interconnect team is housed together under one roof. From electrical design to computer-aided manufacturing and assembly, the team has a well-deserved reputation for on-time delivery of even the most complex PCB/Flex assemblies.





# MISSION-CRITICAL INTERCONNECT SOLUTIONS

## Glenair, Inc.

1211 Air Way • Glendale, California • 91201-2497

Telephone: 818-247-6000 • Fax: 818-500-9912 • sales@glenair.com

[www.glenair.com](http://www.glenair.com)

### Glenair Power Products Group

20 Sterling Drive  
Wallingford, CT  
06492

Telephone:  
203-741-1115  
Facsimile:  
203-741-0053  
sales@glenair.com

### Glenair UK Ltd

40 Lower Oakham Way  
Oakham Business Park  
Mansfield, Notts  
NG18 5BY England

Telephone:  
+44-1623-638100  
Facsimile:  
+44-1623-638111  
sales@glenair.co.uk

### Glenair Microway Systems

7000 North Lawndale Avenue  
Lincolnwood, IL  
60712

Telephone:  
847-679-8833  
Facsimile:  
847-679-8849

### Glenair Nordic AB

Gustav III : S Boulevard 46  
SE-169 27 Solna  
Sweden

Telephone:  
+46-8-50550000  
sales@glenair.se

### Glenair GmbH

Schaberweg 28  
61348 Bad Homburg  
Germany

Telephone:  
06172 / 68 16 0  
Facsimile:  
06172 / 68 16 90  
info@glenair.de

### Glenair Iberica

C/ La Vega, 16  
45612 Velada  
Spain

Telephone:  
+34-925-89-29-88  
Facsimile:  
+34-925-89-29-87  
sales@glenair.es

### Glenair Italia S.p.A.

Via Del Lavoro, 7  
40057 Quarto Inferiore –  
Granarolo dell'Emilia  
Bologna, Italy

Telephone:  
+39-051-782811  
Facsimile:  
+39-051-782259  
info@glenair.it

### Glenair France SARL

7, Avenue Parmentier  
Immeuble Central Parc #2  
31200 Toulouse  
France

Telephone:  
+33-5-34-40-97-40  
Facsimile:  
+33-5-61-47-86-10  
sales@glenair.fr

### Glenair Korea

B-1304 Gunpo IT Valley  
148 Gosan-Ro, Gunpo-Si  
Kyunggi-Do, Korea  
435-733

Telephone:  
+82-31-8068-1090  
Facsimile:  
+82-31-8068-1092  
sales@glenair.kr

